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WHICH FACTORS DETERMINE THE UPGRADING
OF SMALL AND MEDIUM-SIZED ENTERPRISES (SMES)?
EVIDENCE EGYPT, INDIA AND THE PHILIPPINES

Aimée Hampel-Milagrosa, Markus Loewe
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Working Paper No. 866



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Abstract

Many low and middle-income countries suffer from a lack of medium-sized companies, which tend to be the main creators of higher income employment, motors of innovation and economic diversification. The chief reason is that few micro and small enterprises are able to upgrade, i.e. grow and become medium-sized through innovation. An extensive literature discusses manifold explanations but has not yet concluded which are the most important factors: entrepreneur or firm characteristics, personal or business networks or the business environment. This paper contributes to filling this gap on the basis of three extensive empirical case studies on Egypt, India and the Philippines. It argues that the entrepreneur matters much more than recent literature makes us believe. Due to chronic imperfections in the business environment, entrepreneurs in all three countries face similar upgrading constraints: lack of finance, skilled workers, market information, technology and security. Some are able to upgrade despite the constraints but they struggle to sustain their success. The few that succeed in both regards have taken it upon themselves to develop effective coping strategies. In all three countries, they use similar strategies, in which they tend to benefit from above average financial, social and human capital, motivation, risk readiness and willingness to invest in human resources, market research and research and development. As a result, standard reforms in the improvement of the business environment are certainly important but unlikely to translate into the upgrading of a much larger number of MSEs. Inequality of opportunity is going to prevail unless governments are willing to create a level-playing field by the provision of quality education and training, human resource development, access to markets and finance, and rule of law for all.

JEL Classification: D20; L10; L20; L66; L67; L86; M10; M20; M50

Keywords: enterprise upgrading; entrepreneurship; micro, small and medium enterprises; innovation; firm growth; entrepreneurship; business environment; networks; missing middle; India; Philippines; Egypt.

ملخص

تعاني العديد من البلدان المنخفضة والمتوسطة الدخل من نقص في الشركات متوسطة الحجم، والتي تميل إلى أن تكون السبب الرئيسي لخلق فرص العمل ذات الدخل العالي، والمحرك للابتكار والتنوع الاقتصادي. السبب الرئيسي هو أن عددا قليلا من الشركات الصغيرة ومتناهية الصغر قادرة على ترقية، أي أن تنمو وتصبح متوسطة الحجم من خلال الابتكار. تناقش الدراسات واسعة النطاق تفسيرات متعددة ولكن أهمها هو أهمية رجل أعمال أو خصائص الشركة، أهمية الشبكات الشخصية أو الأعمال التجارية أو بيئة الأعمال. تساهم هذه الورقة في سد هذه الفجوة على أساس ثلاث دراسات حالات تجريبية واسعة في مصر والهند والفلبين. ونناقش إن رجل الأعمال أهم بكثير عما يبرزه الأدب الحديث. فبسبب العيوب المزمنة في بيئة الأعمال، يواجه أصحاب المشاريع في البلدان الثلاثة معوقات الارتقاء ممثلة في: نقص التمويل، والعمال المهرة، ومعلومات السوق، والتكنولوجيا والأمن. البعض قادرون على رفع هذه القيود بالرغم من انهم يكافحون للحفاظ على نجاحها. اتخذت الدول القليلة التي تنجح في كل ما يتعلق على عاتقها تطوير استراتيجيات لمواجهة الفعالة. وفي كل هذه البلدان الثلاثة، تستخدم استراتيجيات مماثلة، حيث أنها تميل إلى الاستفادة من فوق متوسط الأسهم المالي والاجتماعي والبشري، والتحفيز، والاستعداد للمخاطر والرغبة في الاستثمار في الموارد البشرية، وبحوث السوق، والبحث والتطوير. ونتيجة لذلك، فإن الإصلاحات القياسية في تحسين بيئة الأعمال هي بالتأكيد مهمة ولكن من غير المرجح أن تترجم إلى رفع مستوى عدد أكبر بكثير من المشروعات المتوسطة والصغيرة. وستسود ظاهرة عدم تكافؤ الفرص إلا إذا الحكومات مستعدة لإنشاء مجال حيوي من خلال توفير التعليم الجيد والتدريب، وتنمية الموارد البشرية، والوصول إلى الأسواق والتمويل، وسيادة القانون للجميع.

1. Introduction

Most low- and middle-income countries are characterised by a phenomenon that is often called the ‘*missing middle*’: they have many micro and small enterprises (MSEs) but only few medium-sized ones and hardly any of the small ones are linked to larger companies. In particular, firms in the medium-sized segment are rare, which is at least partly due to difficulties that small enterprises face in growing and transforming into medium-sized enterprises (Schmitz 1999). This phenomenon constitutes a problem above all because medium-sized companies create the bulk of higher-quality, higher-wage jobs in many countries. Medium-sized companies tend to be the main motor of innovation and economic diversification and are the firms that may become able over time to export their products directly.

A large strand of –mainly theoretical – literature discusses why only very few MSEs manage to upgrade, that is, to innovate and grow. Many factors are suggested: *entrepreneur characteristics* (such as the education or family background of owners), *firm characteristics* (such as the formality status of the firms or the level of training of workers), *inter-firm linkages* (i.e. the firm’s integration into value chains or clusters) as well as *elements of the business environment* (such as regulation, trade policy, the provision of finance, the availability of business development services (BDSs) or infrastructure).

But the literature does not provide much evidence on the relative importance of these factors. This deficit is partly due to the fact that econometric analysis faces difficulties in answering the question. Even panel data do not trace the path of many MSEs because most of these are not registered and frequently change their identity. Qualitative case studies are a more adequate instrument of research but their results are not generalizable unless they are based on at least medium-sized samples and rigorous techniques of data generation and interpretation. This article is therefore based on a hybrid method that combines the strengths of qualitative and quantitative methods using medium-sized samples in three very distinct countries.

The article contributes to filling the gap in the literature. Based on empirical research conducted in Egypt, India and the Philippines in 2012, it provides an answer to two questions:

- Which constraints are responsible for the fact that upgrading seems to be difficult for MSEs in many low- and middle-income countries?
- Which ‘success factors’ explain that some MSEs manage to upgrade (unlike others) despite the general difficulties?

Using empirical evidence from three countries¹, we argue that the entrepreneur matters substantially in enterprise upgrading. Factors such as the education, experience, social capital, ambition and risk readiness of MSE owners are much more decisive for their upgrading potential than the bulk of recent literature has us assume. Governments should thus pay much more attention than in the past to creating a level playing field for all entrepreneurs.

This paper proceeds as follows: the Conceptual Framework in Section 2 presents the ‘Onion Model’ that we developed in order to depict that there are four layers of factors influencing enterprise upgrading. Section 3 specifies the objectives of the three-country project and explains our methodological considerations towards a cohesive empirical research approach. Section 4 presents our findings with regards to the main constraints and success factors of enterprise upgrading for entrepreneurs in Egypt, India and Philippines. Section 5 illustrates these findings with showcases of typical upgrading strategies of ICT companies in India, food processers in the Philippines and garments producers in Egypt. Section 6 concludes and gives suggestions for policy recommendations.

¹ Detailed findings of these three country studies have been published in the following research reports: Hampel-Milagrosa (2013); Loewe (2013); Loewe et al. (2013) and Reeg (2013b).

2. Conceptual Framework

In the simplest terms, we define enterprise upgrading as “growth through innovation” – that is, innovation that induces an increase in any target variable of entrepreneurs, such as the company’s returns, sales, assets or number of employees. The term contains thus both a *qualitative aspect* (innovation) and a *quantitative aspect* (firm growth). We chose the term “upgrading” (normally used only for the qualitative aspect) rather than “graduation” (normally used for the quantitative aspect) because innovation (if defined in a broader sense) is the only growth strategy that entrepreneurs can control: Firms can grow for many reasons, i.e. they may benefit from rising demand for their products (market expansion), changes in input or output prices or competitors’ difficulties – but they are rarely able to influence these factors.

What entrepreneurs can do is to launch a new or enhanced product (*product innovation*), improve the production process (*process innovation*), introduce a new packaging, labeling or marketing method or offer on new markets (*marketing innovation*), engage in new stages of the value chain (*functional innovation*) or move to a new sector (*sectoral innovation*). We define thus innovation in a relatively broad way as any change in the strategy of a firm that is new to the relevant market.

Innovation in itself, however, does not necessarily translate into firm growth. The condition is that the innovation brings something new to the market as a whole – not *only* the innovating firm – and thereby generates an innovation rent. Different strands of literature allude to different factors determining whether an enterprise can upgrade (micro-perspective) and whether it is generally easy for enterprises in one country or region to upgrade (macro-perspective). These factors fall into four broad categories: entrepreneur characteristics, enterprise characteristics, networks (both personal and professional) and the business environment (see the Onion Model in Figure 1).

At the core of the Onion Model are *entrepreneur characteristics*: Some authors refer to human capital (including work experience and training) (Mead and Liedholm 1998, Eifert, Gelb and Ramachandran 2005), entrepreneur age (Cortes and Berry 1987), gender (McPherson and Liedholm 1996) as well as motivation (de Mel, McKenzie and Woodruff 2008) and risk-taking ability (Szirmai, Naudé and Goedhuys 2011) as important factors for enterprise upgrading.

At the second level of the onion lie *enterprise characteristics*. This refers to the strands of literature highlighting the critical role of firm level attributes such as firm age (Banerjee and Duflo 2000), size (Schumpeter 1934), sector (Mead and Liedholm 1998), location (Pyke, Becattini and Sengenberger 1990), informality (La Porta and Shleifer 2011) and absorptive capacity (Cohen and Levinthal 1990), in enterprise upgrading.

The third level of the onion refers to *personal and professional networks*. This level is supported by a wealth of literature that suggests that inter-firm and interpersonal networking plays an important role in the process of enterprise creation and growth (Altenburg and Meyer-Stamer 1999; Granovetter 1982; Humphrey and Schmitz 2000; Johannisson and Nilsson 1989; Stamm 2004).

The outer shell of the onion consists of elements at the *business environment* level. Many studies following this argument claim that the key determinate of the average likelihood of MSEs in a country to upgrade is the overall quality of the business environment (Djankov et al. 2002; Acemoglu, Johnson and Robinson 2002; Acemoglu, Johnson and Robinson 2005).²

² For an extensive review on the different strands of conceptual literature on the factors of SME upgrading see: Reeg (2013a)

3. Research Methodology

Literature does not provide much evidence however on the relative importance of the four layers of factors underlying MSE upgrading – nor how they are interrelated. Our case studies on Egypt, India and the Philippines were therefore meant to provide an answer to the question, which factors are the main determinants (constraints and success factors) of MSE upgrading.

Our main approach to answering this question was to compare the few successful upgraders with the large mass of stagnating MSEs, i.e. to learn from the experience of those MSEs who were able to grow through innovation in order to identify their factors of success.

For this purpose, we conducted surveys of about 100 MSE owners with two sub-samples respectively in each of the three countries: one sub-sample consisted of successful upgraders, whereas the other consisted of comparable non-upgraders. In addition to the survey, we included the results of focus group discussions and expert interviews in our analysis. We tried to use econometric techniques to support our qualitative findings wherever possible and to the degree that our own, or other, data allowed us. Fully representative panel data, however, were only available for Egypt from two rounds of the Egypt Investment Climate Survey (EICS) conducted in 2004 and 2008, which we used for logit estimates.

We used the surveys that we conducted ourselves for three different purposes:

First, we collected information on objective characteristics of upgraders and non-upgraders in order to identify significant differences between the two groups, which may explain why they developed differently.

Second, we asked MSE owners about their subjective perceptions of the factors of upgrading: about their main constraints and success factors and their opinions why some MSEs are able to upgrade while the majority is not. These questions were asked twice during interviews: first in an open question (interviewees could mention whatever factors came to their minds), later in a closed question (interviewees were asked to select the main positive and negative factors from a list for each of the layers of our onion model (entrepreneur characteristics, enterprise characteristics, personal and professional networks and business environment) and then select again the most important ones of these. This was done in order to make sure that (i) interviewees had not forgotten some of the main factors in the open question and (ii) could not all too easily select factors from only one of the layers (e.g. entrepreneur characteristics as reasons of success and the business environment as a constraint).

Third, we asked MSE owners to tell us about experience in order to identify typical trajectories of success and failure from the comparison of their stories.

In all three countries, the definition of MSEs was based on the number of employees. We used this indicator for firm size – and also for firm growth – for pragmatic reasons: it turned out to be the only variable for which entrepreneurs provided reliable reports.

Particular thresholds were defined based on respective country contexts. To be classified as upgraders, the enterprises had to meet the following criteria:

- *Quantitative criteria* (for company growth): (i) Enterprises must have grown by at least 10 per cent per year on average during the last 5–10 years. (ii) They must have started from below a country-specific threshold in terms of the number of regular employees 5–10 years ago (they must have been a micro or small enterprise at that time) and grown beyond that same threshold in the meantime until they were interviewed in 2012.
- *Qualitative criterion* (for innovation): (i) Enterprises must have documented efforts in innovation (improvements in products, production processes (technology upgrading) or ways of organizing production). (ii) And they must have grown substantially faster than their respective competitors (again measured in number of employees) in order to make sure

that their growth was not merely due to external effects, such as growth in demand, but to innovation, that is, the introduction of something that was new to the market and has therefore created an innovation rent.

The bulk of the MSEs in our samples were selected by random techniques: in Egypt mainly by random choice from comprehensive enterprise lists including even informal firms (company registries, telephone books, yellow pages), while in India and the Philippines (where we could not get such lists) by walking the streets in different towns with higher concentrations of producers in our economic sectors of interest and requesting interviews on site with professionals working in MSEs. These techniques delivered a sufficient number of non-upgraders but not enough upgraders because these are scarcer and thus more difficult to find by chance. We therefore added a number of upgraders to our samples, which we identified upon recommendations by experts. Almost exactly half of the upgraders in our samples were selected in this way. Later, we compared the characteristics of the upgraders that had been identified by random and purposive sampling techniques but could not find significant differences. Therefore, we believe that we have reduced any possible selection bias as much as it was possible – especially against the background that a sample of 100 MSEs cannot be fully representative anyway.

With regard to the sector selection, we made sure that chosen economic sectors showed a high proportion of MSEs and also contributed considerably to the gross domestic product of the respective country. Further, we made sure that there would be an overlap of at least two sectors between the chosen country cases, resulting in easier comparability across countries. On the basis of these criteria, we selected the ICT sector in Egypt and India; the leather and footwear sector in India and the Philippines; the food processing sector in Egypt and the Philippines; and the textiles and garments sector in all three countries (Table 1).

4. Findings

Despite apparent differences between the framework conditions of MSEs in Egypt, India and the Philippines, our findings manifest a high degree of consistency:

The *first finding* is that MSEs in Egypt, India and the Philippines perceive very similar *constraints* to upgrading: (i) their owners' deficits in education and experience, (ii) the lack of – or the high turnover of – trained workers, (iii) difficulties in accessing finance, (iv) the lack of market information and (v) deficits in the rule of law. These factors were mentioned most frequently when MSE owners were asked about their five key challenges for innovation and growth. In Egypt, for example, 63 per cent of all interviewed MSE owners complained about deficits in law enforcement in their country, while 58 considered the lack of – or the high turnover of – well-trained and motivated workers as being one of their five major obstacles, whereas 33 per cent pointed to access to finance, 27 per cent to the lack of marketing support, 18 per cent to high taxes and only 14 per cent to their own levels of education and work experience (Loewe, 2013; Loewe et al., 2013, Annex Tables A11a–A12).

It may not be surprising that these factors influence MSE upgrading. Also, it is not astonishing that many entrepreneurs attribute their difficulties more to external factors (especially the business environment) than to their own (lack of) qualities. However, note that only very few respondents pointed to factors that were highlighted as barriers to upgrading in earlier studies – such as, for example, enterprise size, age or location; informality; the owner's gender; or trade and monetary policies. Also, we did not find significant correlation between either of these factors and the likelihood of forms to upgrade – neither in our own samples nor in the more representative EICS sample from 2004/2008 (see Table 4). With regards to firm size, however, our results may suffer from a bias, because we looked only at firms that had started as an MSE i.e. with less than 20 respectively 30 employees five years ago.

The business climate was mentioned as a constraint to MSE development in many interviews – especially interactions between state and businesses such as licensing, taxation, inspections and governmental efforts to safeguard fair competition. However, most of the serious constraints MSE owners were referring to were due to deficits in law enforcement rather than over-regulation, red tape and the costs of procedures (such as licensing and customs) in terms of time and money. These costs matter for entrepreneurs, but their main problem is that they cannot assess these costs in advance, and they do not know what the outcome of the procedure will be. Across the three countries, public officials have significant discretionary leeway in the interpretation of laws and guidelines for MSEs. As a result, MSEs often invest a lot of time, money and effort without knowing whether this will suffice or whether the applications, requests and registrations will ever be approved. MSEs are particularly vulnerable to such weaknesses in the law because they lack the financial reserves and the connections to influential politicians, as compared to larger firms (Loewe 2013).

Deficits in access to finance were also mentioned as a main constraint to upgrading, but they are not always (only) due to supply-side factors. In Egypt, India and the Philippines, deficits do appear to prevail in the provision of adequate MSE finance; however, for many MSEs, access to finance is mainly constrained by demand-side factors: (i) lack of financial literacy (knowledge on repayment conditions and lending costs), (ii) lack of awareness and market information, (iii) inability to design and formulate a business plan, (iv) unclear business ideas and/or (v) unclear / exaggerated expectations.

A *second finding* of our research is that *upgrading is possible* – at least for some MSEs – despite all the constraints: we identified more upgraders than we had initially expected, even when we were not explicitly looking for them. In Egypt, for example, a total of 59 firms were selected by random sampling methods (i.e. from the registries, from telephone books or the like, or by walking the streets) and 29 of them turned out, in fact, to be upgraders. All in all, in terms of the number of employees, half of all the companies in our Egyptian sample grew by at least 50 per cent between 2007 and 2012 (see Figure 2).

However, we also identified a large number of companies that had been considerably larger in the past but that had recently contracted in size.³ The number of firms that grew between 2007 and 2012 was almost equal to the number of firms that contracted – in all sectors and size brackets (see Figure 2). This phenomenon (whereby many enterprises are moving up while many others are moving down) is well known and commonly referred to as “churning” (see e.g. Haltiwanger 2009 or Santarelli and Vivarelli 2006). It also includes the birth of many new companies and the death of many older ones, and it therefore impacts the resulting number of medium-sized companies in an economy. However, as long as the number of firms growing exceeds the number of firms contracting, the group of medium-sized companies can expand. Churning may have occurred in Egypt between 2002 and 2007, since quite a number of the companies we interviewed had grown significantly during those years, and only a few had contracted. Admittedly, the evidence is weak because a similarly large number of companies might have contracted during that same period but are no longer around to tell us what happened. In any case, the shortage of medium-sized enterprises across samples from the three countries is not only due to the difficulties that small firms have with upgrading, but it could also be attributed to the difficulties that upgraded firms face in sustaining their growth over longer periods of time.

The *third and central finding* of the research is that a break-through upgrading depends critically on only a few specific (individual) “success factors”. Differences in these factors explain why some MSEs are more likely to upgrade than others (respectively why some MSEs are able to upgrade at all – despite the many obstacles). In all three countries under research,

3 All contracting companies were classified, just like stagnating companies, as non-upgraders.

upgraders tend to: (i) be better endowed with human capital (high-quality education, relevant work experience⁴ and international exposure⁵); (ii) be more motivated and more willing to take risks; (iii) invest more in human resource development (HRD), that is, training of, incentives for and participation in strategic company decisions by workers⁶; (iv) spend more on research and development (R&D) and market research; and (v) have personal wealth or easy access to finance in the core family (see Table 2).

Clearly, these five factors help MSEs overcome the structural constraints to upgrading mentioned above. They are, for example, less vulnerable to deficits in the access to credit if they have personal wealth. And they can function despite deficits in the rule of law if they are ready to accept high risks. Likewise, on-the-job-training helps them to cope with workers lacking proper vocational education.

In India, social networks⁷ seem to be crucial for upgrading as well – but not so much in Egypt and the Philippines. Likewise, integration into (global) value chains (GVCs)⁸ is an important success factor for upgraders in India but less so in the Philippines and much less in Egypt. At the same time, access to land for production and market diversification (especially towards export markets) emerged as additional success factors in Egypt – but less so in India and not at all in the Philippines. BDSs were found to be a success factor in Egypt, whereas we have no such evidence for India or the Philippines (which may be due, however, to the limited outreach and quality of such services in the other two countries).

This, our third finding, is based on the use of *three research tools*, which *point to the same variables* as major factors behind enterprise upgrading in Egypt, India and the Philippines.

(i) *The perceptions of interviewed MSE owners*: Upgraders across the three countries were asked in an open question how they had managed to grow despite all the obstacles. In addition, in Egypt, all MSE owners (both upgraders and non-upgraders) were also asked to select from a closed list of about 50 possible factors from all the layers of our onion model (see Figure 1) what they perceived to be the five main reasons for differences in the success of different MSEs in their country.

The result was that in all three countries, a clear majority of interviewees attributed differences in the individual likelihood of firms to upgrade mainly to entrepreneur characteristics. According to their perceptions, the most important factors of success in upgrading include the human capital of company owners (education, work experience and international exposure) and their ambition and readiness to take risks, followed by their access to finance (in most cases by individual or

4 Relevant work experience would be that entrepreneurs have worked in the same sector (preferably in a lead firm) before starting their own businesses.

5 International exposure includes both, having been abroad for studies – for professional or private purposes – as well as having been in intensive contact with foreigners within the country, such as, for example, during studies at international schools or universities.

6 HRD includes most types of investment in workers that improve their skills, their motivation to work, their ownership of the quality of their products and their well being, thereby reducing the turnover of workers. This can be on-the-job training, more generous wages, non-wage benefits such as child care and social security, good treatment of workers, participation in important decisions on the orientation of the enterprise and a nice work atmosphere.

7 Social networks are particularly important for MSE owners in the Philippines for getting access to finance, advice, know-how, emotional support, unpaid labor, connections and support for childcare. The results for India are somewhat ambiguous, whereas social networks seem to play a much less important role in Egypt; at least for the three sectors that we studied there, we did not find any evidence that differences between entrepreneurs regarding social capital have any impact on their likelihood to upgrade. However, the situation might be different in other economic sectors such as tourism and construction, where there is much anecdotal evidence about the importance of *wasta* (connections) for doing business.

8 GVCs help MSEs to acquire feedback on the quality of their products, market information, stable sales and access to global markets.

family wealth) and their investment in HRD, market research and marketing and research and development (R&D). Apart from these factors, access to land was also mentioned quite frequently in Egypt, while personal contacts were considered to matter a lot by many interviewees in India and also some in Egypt (see Table 3).

(ii) Comparison of characteristics of upgraders and non-upgraders in the three samples: Upgraders were compared with comparable non-upgraders with regard to these same variables (see Table 4). The differences between the two groups were particularly significant regarding the levels of formal education, international exposure, investment in HRD, investment in marketing, access to credit and access to BDSs (which may, however, include credit as well). In addition, membership in a business association and co-operation with other companies in the same economic sector was also found to correlate significantly with upgrading in India and the Philippines but not significantly in Egypt.

Differences between upgraders and non-upgraders in having inherited their firms from their families and in “bribing when necessary” are also significant but contradictory. These factors seem to have a positive effect on upgrading in India and the Philippines but a negative one in Egypt – or the correlation is due to reverse causality in one or more of the three countries.

Formalization and membership in business organizations was found to correlate positively with upgrading as well, but this is due to reverse causality. For every factor, we also asked how the situation had been five years ago. This additional question revealed that even most of the formalized upgraders had been informal in the beginning and had formalized only once they had grown.

These findings are also based on the statements of interviewed MSE owners; but these statements were on real factors, and in several cases (though not systematically), we as interviewers had the opportunity to crosscheck the statements.

(iii) Logit estimates with Panel data on Egypt from 2004/2008: Finally, we used panel data from two rounds of representative enterprise surveys conducted in Egypt in 2004 and 2008 for a logit estimate assessing the impact of selected independent variables on the propensity of a firm to upgrade. The dependent variable was constructed as a dummy depending on both innovation and firm growth. Unfortunately, no panel data are available on MSEs in India or the Philippines.

Table 5 shows that this technique of analysis points mainly to the effects that workers’ training, investment in R&D, target-market diversification (share of exported products) and access to credit have on upgrading. Considering licensing as the main obstacle for enterprises was also found to correlate significantly with the likelihood of an MSE to upgrade, but this correlation seems to be positive – at least in Egypt – which would mean that companies complaining mainly about problems concerning business licensing do not have much reason to be complaining at all. Their main problem is minor compared with the problems that other enterprises face.

Our results are ambiguous with regard to the gender of owners, formality and the age of MSEs. We did not find evidence that female ownership negatively impacts MSE upgrading. In Egypt and the Philippines, we found the share of female entrepreneurs among upgraders not to differ significantly from their share among all entrepreneurs (Tables 2 and 4). In addition, most women entrepreneurs interviewed in Egypt and the Philippines stated that being female was an advantage rather than a disadvantage for their business. According to them, the low number of women entrepreneurs is due to negative notions about women’s participation in economic activities rather than objective constraints. However, once a woman runs an enterprise, she gains the same level of respect as a man.

In India, by contrast, we cannot say for sure, as we were not able to interview more than four female entrepreneurs altogether. This may hint to uneven opportunities for men and women as entrepreneurs, but it can also be due to a gendered selection bias. In-depth interviews suggest that some sectors (e.g. leather and footwear) seem to be inaccessible for women entrepreneurs in general.

For informality, we found a statistically significant correlation with upgrading across the three countries. However, this correlation is probably due to reverse causality, that is, informal companies that had grown or decided to grow had sooner or later decided to formalize. Many owners of formal and informal MSEs stressed that formalization did not constitute a barrier to growth. Informality would thus be a deliberate choice of most micro and small entrepreneurs, because they perceive the disadvantages of formality to outweigh its advantages. Once companies upgrade, they reconsider their formality status and often gradually formalize when they believe that the advantages of formality have gained in importance.

The age of an MSE is obviously correlated with its likelihood to upgrade but this correlation is non-linear, and age is not the independent variable in the correlation. After their foundation, MSEs must first get settled and organised; normally they do not yet have the capacity to expand substantially. The likelihood of upgrading is greatest after this start-up phase, which may last one to four years, but diminishes then steadily again over time. If MSEs have the potential to upgrade, they will try to use it as soon as possible rather than wait for years. Hence, if an MSE does not upgrade during the first five years after its start-up, it is becoming less and less likely to upgrade ever – unless there is a change in its ownership or management. For example, in the case of upgraded family business in India a change in management, mostly by the entrepreneurs' son, has led to considerable growth dynamics of the firm.

Our *fourth finding* is that upgrading requires a *combination of success factors* for most MSEs in the three countries. Entrepreneurs find themselves confronted with different challenges, which they have to simultaneously overcome in order to upgrade. According to the results of our interviews, these challenges can be grouped under five main headings: getting finance, access to labour, markets, technology and a minimum level of reliability/ security (see Figure 3). And entrepreneurs must address all of these challenges at a time.

However, there are different options for entrepreneurs to do so – for each of the five broad challenges, i.e. these options are substitutes (see Figure 3). Each of them is in a way related to either of the layers of the Onion Model portrayed by Figure 1. Production technology, for example, may be readily available for MSEs for free or for sale from the *business environment* (national innovation systems, research institutions, machinery suppliers etc.). However, MSE owners could also be very creative and develop their own ideas about how to manufacture their products (which would be an *entrepreneur characteristic*). Or, they could set up an R&D department to develop a suitable production technology (*enterprise characteristic*) or acquire the necessary know-how from their foreign purchaser (*business networks*).

The way in which entrepreneurs combine solutions for each of the five challenges depends strongly on their context because the availability of these 'success factors' differs from one sector and country to the other. Still, MSEs operating in the same context (country, region, sector etc.) tend to use very similar strategies for mastering each of the five big challenges mentioned above so that one could say that a specific combination of success factors characterises MSEs of the same kind in a given country. The following chapter presents examples for such kinds of 'combinations of success factors'.

The *fifth finding* is that *entrepreneur characteristics tend to be the cornerstones* of these factor combinations. The bulk of MSE owners rely on their own education, work experience, international exposure, motivation, risk-readiness and savings for their upgrading. The majority of key success factors listed above belong to the core of our Onion Model (see Figure 1). Most

of the other key success factors are also contingent upon the personalities of entrepreneurs. MSE owners need a certain level of education, experience and possibly even international exposure to understand how important it is to invest in social networks, R&D, marketing and workers (training, provision of incentives, participation in decision-making) and to have a well-framed firm strategy (e.g. on market orientation or portfolio diversification). They also need certain levels of education and risk-readiness in addition to access to finance in order to be able to successfully implement all this. Finally, even access to finance often depends much more on demand-side factors (such as the financial literacy of entrepreneurs or their ability to draw up a proper business plan) than on supply-side factors (provision of credit by banks or other organizations).

The reason is that, due to chronic imperfections in the business environment of low- and middle-income countries, entrepreneurs have to take it upon themselves to compensate for the deficits in the system. They must invest their own capital to offset difficulties in obtaining credit. They must train their workers on the job to compensate for the low quality and limited outreach of the vocational training system. They must be willing and able to accept high risks because of severe deficits in the rule of law. And so forth.

As a consequence, and this is our *sixth finding*, there is glaring inequality regarding opportunities for MSEs to upgrade. The requirements for coping with the chronic imperfections in the business environment are unequally distributed across the population. Only the most privileged – those who have enough capital, good education, international experience, relevant work experience, motivation and enough security to accept risks – are able to circumvent structural constraints, whereas the huge majority of less fortunate entrepreneurs fail. In other words the entrepreneur themselves makes the difference!

5. Showcases of Successful Upgrading Strategies

In the following, we present upgrading trajectories that are typical for MSEs in specific sectors of the three examined countries: ICT companies in India, food processors in the Philippines and textile producers in Egypt. These three examples showcase how upgraders have made use of particular factor combinations to tackle their main challenges and developmental constraints.

Apparently, the central element of all of these combinations of success factors is in the very core of the Onion Model presented in Figure 1: *entrepreneur characteristics*. A large number of MSEs in Egypt, India and the Philippines rely strongly on the interaction of a well informed, educated and socially embedded entrepreneur using his own resources as well as his own personal networks to compensate for multiple dysfunctions in the outer layers of the Onion Model – in particular in the business environment.

While this “entrepreneur-driven” upgrading is observed in all three countries, there are, in fact, differences between the countries in the intensity by which entrepreneurs make effective use of their networks. As a consequence, our *seventh and last finding* is that there are significant differences in the degree to which MSEs can tap on support from their personal and professional networks for their coping strategies. Entrepreneurs in India and the Philippines are able to compensate to some extent for deficits in the business environment by mutual aid and action. To some degree they exchange funding and knowledge, convinced that co-operation pays off in the long run. In contrast, in Egypt entrepreneurs are much more reluctant to invest in and rely on their personal and professional networks. This does not mean at all that people in Egypt are different from those in India and the Philippines. Rather, the framework conditions do not reward joint action. While entrepreneurs in India and the Philippines have apparently learnt that they can benefit from investments in social capital, many of those in Egypt tell that they have made (or heard much about) bad experiences with the provision of mutual support (e.g. partners have not paid back what they were given). In the end, the behaviour of entrepreneurs in Egypt is due to deficits in the rule of law. In Egypt, legal procedures are even more lengthy and

unreliable than in India and the Philippines with the effect that it is even more difficult for entrepreneurs to get their contracts enforced.

5.1 The ICT sector in India and the challenge to access markets

In the last three decades India has developed an internationally competitive ICT sector. With the improvement of the information technology and telecommunication infrastructure as well as the supply of educated workers through the establishment of the Indian Institutes of Technology, many foreign and multinational companies were attracted to offshore and outsource software services in several Indian cities, such as Mumbai and Bangalore. In particular, the practice of sending Indian ICT professionals to the United States to work on assigned projects (also called “body shopping”) within multinational subsidiaries led to the development of an ICT diaspora which has gained substantial exposure in developing technical, industry as well as domain experience. Due to low initial investment costs the ICT service industry provided opportunities for first-generation entrepreneurs to start their own small companies. Yet, a major challenge for ICT start-ups is access to profitable markets. Many segments of the Indian ICT market are still too small to allow for MSEs to access a reliable base of clients and buyers. Most public organisations and larger companies buy reputed international products while smaller companies prefer low-cost providers. Thus, breaking into the more profitable domestic markets as a smaller ‘no-name’ IT start-up without having a direct linkage is quite challenging.

Upgraders had to compensate for the lack of accessible domestic market opportunities by developing two main coping strategies: either accessing international business (i) directly or (ii) by establishing entry to the very few profitable business opportunities in the national market. For these strategies to unwind, upgraders initially used factors at the *entrepreneur, personal network* and *professional network layer*. At a later stage factors associated with the *enterprise layer* were added.

These factors were most prominently the entrepreneur’s quality education at reputable graduate schools, their subsequent work exposure in international lead firms as well as their ability to utilize *personal* as well as *professional networks* to gain market access. Indeed, most upgraders knew their international clients before starting their enterprise. This is because entrepreneurs build strong informal networks while being employed in international lead firms. Also, whether initial clients were located in India or abroad was irrelevant, however, the strategic decision to initially focus on one to two strategic partners helped small enterprises to build a stronger reputational record. With these strategic partners, upgraders reported to have gained crucial learning experiences helping their firms. Above all, the strong cooperation with lead firms allowed micro and small ICT companies to become more visible for other market participants.

Further, with the development of stronger market visibility, upgraders started to invest in more professionalised in-house market research, marketing and sales. Thus, at this point factors at the *enterprise level* became instrumental to widen market coverage and to expand the business beyond the established base of clients. However, *personal networks* were reported to remain the main marketing channels in extending the client base. Yet, extending the client and market base was not random but rather selective and strategic, in particular for companies aiming at adding value to their services. Upgraders who had a software development focus were quite choosy about their clients as the coherence and strategy positioning of a product or service may be in conflict with the short-term need to customize certain activities. It seems that successful companies have rejected business or single requests in order to save the genuine software product from falling into the customisation trap instead of becoming a scalable, sellable and thereby profitable product. Following this approach software product companies aimed at establishing visibility in one or two domains such as finance or energy. In contrast, ICT service

oriented companies adopted strategies to scale-up business by entering as many domains possible.

5.2 The food processing sector in the Philippines and the challenge to get well educated and skilled workers

Philippine food manufacturing – including the food-processing sector – is the country’s biggest primary industry. In 2009, the industry accounted for around 40 per cent of total manufacturing output, represented a gross value added of more than US\$ 2 billion and exhibited an annual growth rate of 9.7 per cent from 1999-2003, with processed fruits like mangoes, bananas and pineapple contributing the biggest share in processed food export at 32.7 per cent.

A common challenge to food processors is the lack of educated and skilled workers to employ. Although food processors would have wanted to engage more highly educated or skilled employees, most of their workers are either primary or secondary school graduates, who do not possess relevant training. To overcome this constraint and increase their chances of success in upgrading, entrepreneurs use a combination of factors found to encompass several layers of the Onion Model. Their most intensive efforts appear to focus on the first three layers of the model – investing in themselves and HRD for their employees first, then reaching out to their networks later.

Although some of the entrepreneurs had food processing degrees, many did not. Thus at the level of *entrepreneur characteristics*, the owner prioritises learning the skills of the trade or improving his existing stock of knowledge. A common undertaking of all upgraded entrepreneurs is their frequent participation in seminars and short-term courses that tend to update their previous learning and skills. Investing in learning allows the entrepreneur to effectively lead production and innovation but also to replace an employee and use personal labour when necessary. Furthermore, as a strategy to hedge against the lack of available skilled workers in the labour market, at the *enterprise level*, entrepreneurs were found to send their key employees to trainings as well as involve them in operational, technical and planning activities within the firm. At the *networks level*, entrepreneurs were found to frequently tap into personal and professional networks to overcome labour constraints. The family as part of the *personal network* is the usual source of unpaid labour until skilled workers are found or replaced. Moreover, since they technically operate within the same sector, upgraders commonly inquire other *professional networks* for referrals on qualified former employees that they could take in. Professional networks (including networks from within the government) have also been tapped for information on the different kinds of employee skills training on offer from both public and private agencies.

Finally, as a strategy at the enterprise level, successful entrepreneurs were found to provide incentives to keep skilled workers in the company. Absorbing monthly payments such as social security and health insurances, providing benefits, being flexible during workers’ family emergencies, and hosting social events in-house are measures that effectively limited the rapid fluctuation of skilled employees.

5.3 The textile and garments sector in Egypt and the challenge to access finance

The textile and garments industry is one of the oldest manufacturing sectors in Egypt and continues to be one of the most important ones. Textile production started early in the 20th century when Egypt was still controlled by the United Kingdom. It benefitted from cheap labour, proximity to European and Asian markets and the outstanding quality of Egyptian cotton. These production advantages still play a role but the competition from East and South Asia has become very tough because labour productivity is much higher in these regions than in Egypt. Nevertheless, textiles and garments accounted still for 27 per cent of Egypt’s total industrial output and 14 per cent of all non-petroleum exports in 2008, and 76 per cent of all producers were MSEs (CAPMAS 2009; Oxford Business Group 2012, 118).

The main concern for MSEs in the textile and garments sector is access to finance – much more than in the other studied sectors (food processing and ICT). This holds in particular for textile producers, which need comparatively expensive machines. The *business environment* (outer layer of the onion portrayed by Figure 1 and 3) fails to provide adequate credit and venture capital to the majority of MSEs. One reason is that the Egyptian banking system is rigid and underdeveloped. Competition is still low with a few large lending institutions still dominating the sector. In addition, banks are extremely cautious; they prefer to lend to the government or large companies rather than to MSEs. And bank employees are not well trained to assess the business plans of MSEs; instead, they require very high collaterals that most MSE owners cannot provide (Loewe et al. 2013, 154-161).

But much of the problem lies also on the demand side. Many MSE owners are afraid of taking up a loan (because they might not be able to pay back) or refuse to pay interest in general. Others do not know how to apply for a credit or to fill in credit request forms, while others are unable to provide financial documentation about their businesses or a proper business-plan.

Egyptian MSEs must resort to other sources of funding. But, in contrast to their Indian and Philippine peers, only few are granted credits from their customers or suppliers (i.e. from the *business networks layer* of our Onion Model), and hardly any take up informal loans from friends, neighbours or relatives (i.e. from the third, the *personal networks layer* in the Onion Model). This is symptomatic for the coping strategies of Egyptian MSEs in general, which tap very rarely on their social or business networks for mastering any of the challenges displayed in Figure 3 (finance, labour, markets, technology, security). The reason is the low level of mutual trust between companies and individuals in Egypt. MSEs are very reluctant to cooperate in any way because it is very difficult to enforce contracts – for example, to claim back a loan. Many have had bad experiences in this regard because legal procedures tend to be lengthy and arbitrary. Deficits in the rule of law are hence once more the root of the problem.

So how do Egyptian entrepreneurs overcome the challenge of lack of access to finance? Some MSE owners tap informal sources of credit such as e.g. moneylenders but they have to pay considerable interest rates. The bulk of MSEs have no access to finances besides their own funds (i.e. from the *very inner layer of our Onion Model*) – with the effect that more affluent SME owners have greater upgrading potential. Many textile producers can therefore only survive because they have inherited a factory from their father or grandfathers and can still use the old machinery. Especially in traditional clusters of textile production, many of the engines date back to the 1920s and 1930s. But when these break down only the more affluent entrepreneurs can afford new ones. Start-ups have hardly any chance to establish in the textile sector unless they have an alternative source of finance (e.g. another enterprise in a different sector) from which they can cover the necessary investments.

6. Conclusions and policy recommendations

This paper set out to explore why upgrading seems to be difficult for micro and small enterprises in many low- and middle-income countries and to identify ‘success factors’ that explain why some MSEs manage to upgrade despite the general difficulties. To this end, we employed the four-layer Onion Model, which systemises entrepreneur and enterprise characteristics, personal and professional networks and the business environment, for investigating upgrading dynamics in Egypt, India and the Philippines.

Despite apparent differences in the framework conditions among MSEs, our findings manifest a high degree of consistency across three countries. We found that micro and small enterprises in Egypt, India and the Philippines are confronted with very similar constraints to upgrading and yet despite all identified constraints, upgrading is still possible for some of them. The likelihood to upgrade is higher for businesses where the entrepreneur is better endowed with human capital, has higher motivation and risk taking ability, is willing to invest in human resource development,

R&D and market research and possesses personal wealth or easy access to family finance. Integration of the enterprise in global value chains also seems to increase upgrading likelihood. We found that enterprise upgrading is made possible when the entrepreneur develops strategies from a combination of success factors that allow them to simultaneously overcome a range of challenges. Although the exact combination of factors strongly depends on the entrepreneurs' context due to sector- and country-specificities, our research provides evidence that the cornerstones of these factor combinations lay on entrepreneurial characteristics. Majority of key success factors we found belong to the inner layer of the Onion Model (i.e. towards the individual) whereas the rest of are contingent on entrepreneurial characteristics. This points us to our last finding, that there exists an evident inequality of opportunity for MSEs to upgrade because the fundamental factor requirements for overcoming upgrading constraints are unequally distributed across the population.

Thus, the three country studies have led us to conclude that the entrepreneur matters much more than what recent literature would lead us to believe. As a consequence, even if governments continue to improve the business environment, this does not automatically translate into success for a large number of MSEs. There is no question that the business environment is also important, but inequality of opportunity is going to prevail as long as governments are unable or unwilling to compensate actively for the uneven distribution of financial, human and social capital through the provision of quality education, quality training, and access to finance and market information for all. Unless governments address these structural issues, the number of upgraders will remain limited and the problem of the missing middle will prevail. Efforts to improve the business environment should be continued, but for MSE upgrading, more fundamental policy reforms and interventions that aim to create a level playing field may be even more important. In particular, governments should consider the following policy directions if they are willing to support MSEs in their upgrading efforts:

Education. National education systems must be overhauled in a way that they promote creativity, imagination, analytical abilities, critical thinking and other skills needed for entrepreneurship. One way to achieve this is to promote basic primary schooling as fundamental entrepreneurship policy. Without high-quality basic primary education, individuals will face strong entry barriers to starting and running an enterprise later on. It does not necessarily have to be provided by the state but it must be evenly free and accessible for every child and provide good and relevant education that comprises more than the repetition of know-how but also the management and generation of know-how and experience and self-organization and organization within groups.

Moreover, at higher education levels, the coverage of vocational training programs should be extended. Governments should raise awareness among entrepreneurs about the importance of human resource development. In our interviews, it became apparent that entrepreneurs who had attended international schools or universities were on average much more successful than those who had gone to national schools only. One reason for the difference was international exposure for the first group. But another reason was that those who had attended international schools or universities had received better education in terms of creativity, imagination and critical thinking.

Work experience. Prior to starting or taking over a business, industry exposure is critical for entrepreneurial success. Programs that expose exceptional university graduates and high-performance employees to entrepreneurship training can therefore tap into a very fruitful source of entrepreneurship experience. Some of our Egyptian interviewees reported having received such training (provided by private institutes but funded by the government of Egypt) with great success; some reported that the training had made for them the essential difference. Also, regarding loan applications, former industry credentials should play a crucial role in supporting the business case.

Human resource development. Governments should consider supporting firms in providing on-the-job training to their workers and raising entrepreneurs' awareness of the importance of human resource development (for example, workers' training, improvements in labor conditions, non-wage benefits, participation of workers in decision-building) as a means to gain worker loyalty towards a firm. Again, we have got evidence for effectiveness of such measures from interviews in Egypt; 13 company owners reported having sent all of their workers to short-term training measures provided by specialized institutes but financed by the Industrial Modernization Centre of the government of Egypt. Almost all of them were upgraders, and they all attributed part of their success to the participation of their workers at the training.⁹ A study by Stone and Badawy (2011) confirms that companies offering their workers formal training are more likely to upgrade in several Middle East and North African countries.

Access to markets. Policy-makers are encouraged to make information on local and foreign markets available to all MSEs and help them to link with larger domestic and foreign firms. Enabling MSEs to participate in established fairs or market their services in local and national media will help in overcoming the lack of visibility that most MSEs suffer from. Interviewees from all three countries who had participated at international fairs (some on invitation of their government) reported that this had provided them with the information they needed in order to adjust their product portfolios and marketing strategies.

Access to finance. Governments should encourage banks to provide more credit to MSEs and improve the financial literacy of MSE owners with an eye towards strengthening their capacities to apply for credit. Incentivizing bankers to develop targeted financial products for different kinds of entrepreneurs at different stages of development. Moreover, in order to improve the quality of financial services, it is necessary to improve the local information and knowledge infrastructure of banks assisting MSEs. Industry associations might play an important role in facilitating know-how on trends and business opportunities for financial institutions.

Rule of law. Governments should enhance the rule of law by strengthening the accountability of public sector employees and the provision of incentives for better compliance by everybody with existing laws and regulations. Probably this last measure is the most important and most effective of all but, admittedly, it might also be the most difficult to implement in a context where many people in public administration and courts benefit from the lack of monitoring and transparency, which gives them substantial room for maneuver and corruption.

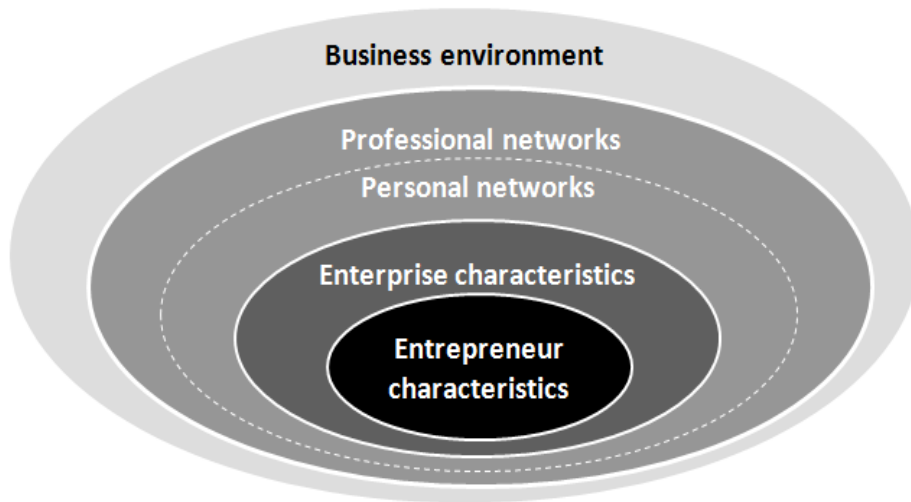
⁹ Part of the correlation between training and upgrading is, however, due to reverse causality, i.e. workers were admitted to the training after the success of the companies became apparent. But the majority of the upgraders had sent their workers to the training courses before they were able to grow.

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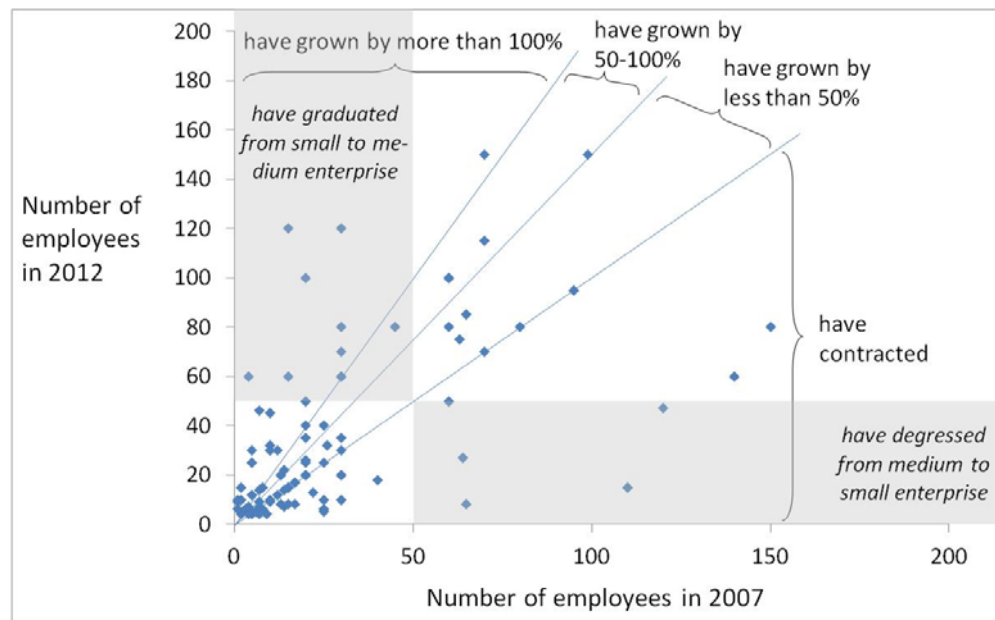
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Figure 1: Factors underlying MSE upgrading – the Onion Model



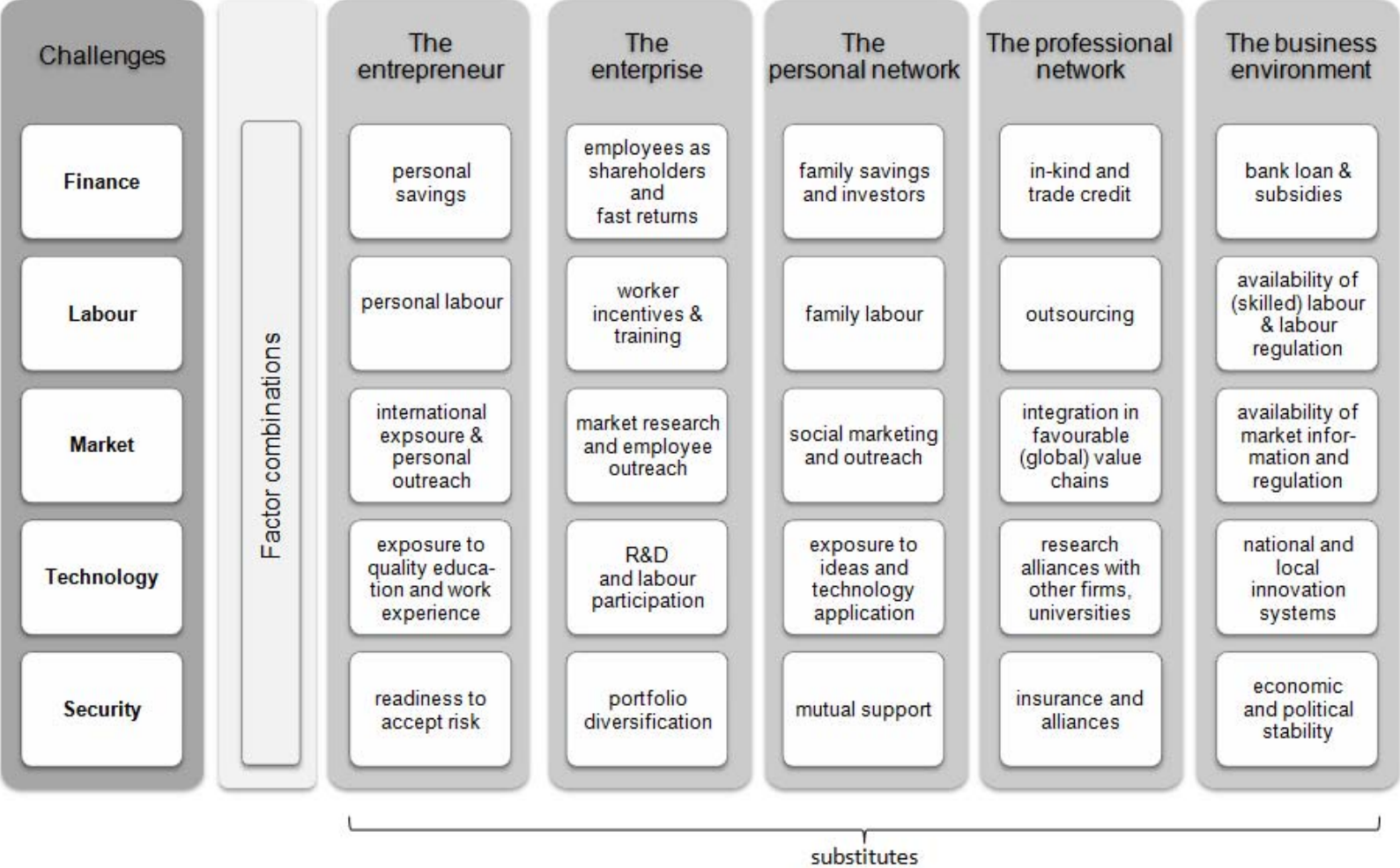
Source: Reeg (2013a).

Figure 2: Growth and Contraction of Companies in the Egyptian Sample



Source: Loewe et al. (2013, 91).

Figure 3: Possible Combinations of Success Factors



Source: Own design

Table 1: Cross-Country Sample Composition

	Egypt	India	Philippines
Total	80	93	112
Upgraders	40	42	21
Non-upgraders	40	51	91
Textiles & garments	43	29	31
Leather & footwear	–	37	32
Food processing	26	–	49
Information and communication technologies (ICTs)	11	27	–
Formal at start	59	28	30
Informal at start	21	65	82
Female owner	15	4	58
Male owner	65	89	54

Source: Hampel-Milagrosa (2013); Loewe et al. (2013) and Reeg (2013b).

Table 2: Success Factors: What Makes an Upgrader?

	Egypt	India	Philippines
Entrepreneur characteristics	<ul style="list-style-type: none"> • Human capital (education, experience & international exposure of owner) • Individual/ family wealth • Motivation • Readiness to take risks • Corporate governance 	<ul style="list-style-type: none"> • Human capital (education, experience & international exposure of owner) • Individual/ family wealth • Motivation 	<ul style="list-style-type: none"> • Human capital (education, experience & international exposure of owner) • Individual/ family wealth • Motivation • Readiness to take risks
Firm characteristics	<ul style="list-style-type: none"> • HRD / workers' welfare • Spending on R&D and market research • Location (access to land) 	<ul style="list-style-type: none"> • HRD / workers' welfare • Spending on R&D and market research 	<ul style="list-style-type: none"> • HRD / workers' welfare • Spending on R&D and market research
Personal Networks		<ul style="list-style-type: none"> • Social networks 	
Professional Networks		<ul style="list-style-type: none"> • Integration in GVCs • Membership in a business organisation 	
Business environment	<ul style="list-style-type: none"> • Access to credit • Access to land, electricity and road infrastructure • Access to business development services 	<ul style="list-style-type: none"> • Access to credit • (Access to land and electricity) 	<ul style="list-style-type: none"> • Access to credit

Source: Hampel-Milagrosa (2013); Loewe et al. (2013) and Reeg (2013b).

Table 3: Main Factors of Success for MSE Upgrading According to MSE Owners

	Egypt non- upgraders %	Egypt Upgraders %	India Upgraders %	Philippines Upgraders %
Entrepreneur characteristics				
Human capital (quality education, work experience or international exposure of company owner)	53	48	76	53
Ambition of company owner	40	55	45	38
Readiness of company owner to take risks	28	28	12	9
Access to finance (in most cases by individual / family wealth)	23	18	30	–
Gender of company owner	3	8	–	–
Firm characteristics				
Training of, incentives for or participation of workers	10	20	86	59
Investment in market research and marketing	16	29	33	6
Investment in research and development	5	26	19	6
Organisation of work within the firm / corporate governance	5	26	12	–
Geographic location (matters in Egypt mainly for access to land)	3	15	5	–
Specialisation	3	10	2	–
Economic sector	13	–	–	–
Formality status	5	5	–	–
Personal and professional networks				
Personal contacts (often mentioned as a way to attract clients)	13	20	60	3
Cooperation with other firms (especially across borders)	5	8	38	6
Business environment				
Access to land, electricity and road infrastructure	28	13	–	3
Bribery and favouritism	10	5	–	3%
Access to BDSs	3	8	10	3%
Access to insurance	3	5	–	–
Tax system	0	5	–	–
Bureaucracy	3	0	–	–

Note: Percentages refer to the share of interviewees within the relevant sample group having identified the respective factor as a main factor of success.

Source: own data collected for Hampel-Milagrosa (2013), Loewe et al. (2013) and Reeg (2013b).

Table 4: Correlation of MSE upgrading with selected independent factors

Proportion of companies with the following characteristics	Egypt			India			Philippines		
	Up-grader %	Non-up-grader %	Significance (t-test) %	Upgrader %	Non-up-grader %	Significance (t-test) %	Upgrader %	Non-up-grader %	Significance (t-test) %
Entrepreneur characteristics									
Female owner	28	10	**	5	4		66	48	
Owner has university degree	80	63	*	83	47	***	81	24	***
Owner has had international exposure	70	48	**	52	20	***	62	4	***
Company was inherited	18	28		57	39	**	86	26	***
Firm characteristics									
More than 20% of workers have enjoyed formal training	25	5	**	n/a	n/a	n/a	100	2	***
Company is formalised	93	75	**	100	39	***	100	15	***
Invests in market information	n/a	n/a	n/a	52	22	***	90	37	***
Personal and professional networks									
Is member of a business association	28	18		86	27	***	81	6	***
Is located in a cluster	23	18		n/a	n/a	n/a	n/a	n/a	n/a
Cooperates with similar companies	48	33		31	14	**	95	44	***
Business environment									
Has received BDSs from the state or NGOs	33	5	***	48	24	**	71	62	
Has got a bank loan	13	3	*	60	12	***	5	2	
Has ever bribed	40	55	*	74	35	***	33	90	***
Has problems with power supply	20	20		71	47	**	n/a	n/a	n/a
Has problems with transportation	48	43		10	22		19	31	

Notes: *** / ** / * = t-test shows statistical significance at the 1% / 5% / 10% confidence level.

Source: Hampel-Milagrosa (2013); Loewe et al. (2013) and Reeg (2013b).

Table 5: Logit Estimations for ‘Upgrader’ Dummy As the Dependent Variable for MSEs in Egypt – Based on Panel Data from Two Rounds of the Egypt Investment Climate Survey (2004 and 2008)

Independent variables	1	2	3	4
Female owner (dummy)	0.225 (0.324)			
Single shareholder (dummy)		-0.00426 (0.00448)		
Years of top manager’s experience		0.00516 (0.0116)		
Size of company (total number of employees)	-0.000266 (0.000690)			
On-the job training for workers available (dummy)	0.702** (0.302)		0.703** (0.301)	
Has specialised R&D department (dummy)		0.646** (0.310)		0.576* (0.306)
Use of foreign technology (dummy)	0.257 (0.392)		0.190 (0.400)	
Located in an industrial zone (dummy)	0.336 (0.306)		0.209 (0.312)	
Share of products sold domestically	-0.0170*** (0.00442)		-0.0164*** (0.00445)	
Access to external finance (dummy)	0.624* (0.330)		0.555* (0.322)	
Access to insurance (dummy)	-0.115 (0.306)			
Main obstacle is infrastructure (dummy) +			0.372 (0.488)	0.182 (0.478)
Main obstacle is access to labour (dummy) +			0.0125 (0.810)	0.0738 (0.785)
Main obstacle is access to finance (dummy) +			0.217 (0.542)	0.513 (0.510)
Main obstacle is illegal competition (dummy) +			-0.627 (0.780)	-0.592 (0.771)
Main obstacle is uncertain macro-economic or political situation (dummy) +			0.544 (0.379)	0.612* (0.367)
Main obstacle is corruption (dummy) +			-0.0830 (0.601)	0.0296 (0.587)
Main obstacle is business licensing (dummy) +			1.487** (0.698)	1.498** (0.662)
Main obstacle is other factor (dummy) +			-0.556 (0.663)	-0.551 (0.648)
Constant	-1.159** (0.454)	-2.261*** (0.383)	-1.361*** (0.485)	-2.545*** (0.273)
Observations	625	610	625	628

Notes: Standard errors are in parentheses. *** / ** / * = significant at the 1% / 5% / 10% confidence level. The estimates use data from two rounds of representative Egypt Investment Climate Surveys (EICSS) conducted in 2004 and 2008 (Enterprise Surveys 2004/2008). Each round covered about 1000 systematically selected enterprises but panel data exist for only slightly less than 700 of them because 300 companies had disappeared for unknown reason between 2004 and 2007 and had to be replaced by other ones. The ‘upgrading’ dummy variable was constructed from the difference between the data for 2004 and 2008. It was set as ‘1’ for companies that grew by at least 40 % (i.e. 10 % per year) in their number of employees and also introduced at least one type of innovation; otherwise ‘0’. For the independent variables, we used only data from 2004 in order to control for possible reverse causality. + In models 3 and 4, ‘Main obstacle is the tax system’ is the reference category for the other obstacles.

Source: Loewe et al. (2013; Annex C).