

Draft paper: The causal effects of vocational skills development: A generalised Theory of Change

Theories of Change (ToC) are models showing how activities of an intervention are expected to lead to the intended results, setting out the steps along the way from inputs to outputs, outcomes and impact, along with the causal link assumptions at each step.

The model outlined here is a generalised ToC for vocational skills development (VSD) projects. The main elements and causal pathways presented are applicable to different types of VSD projects, including all four types described in SDC's VSD typology (SDC, 2019a). They can be applied to different types of learning (formal, non-formal, informal) and companies (small and large resp. belonging to the formal or informal part of the economy).

The generalised ToC can serve cooperation partners to:

- Develop project specific ToCs: Given that interventions and their contexts differ from case to case, the ToC elements need to be tailored to each specific project. While the generalised ToC covers many situations, specific ToCs can be more focused and concrete, for instance by adding information when results are to be expected.
- Locate an intervention within the overall causal chain: Most projects focus on a part of the causal chain, both when implementing a project and monitoring its effects. The generalised ToC offers a bird-eye view on the connections and interdependencies.
- Use the listed assumptions as a checklist: The COM-B ToC model (see box) underlines the importance of assumptions: Assumptions are events and conditions necessary or likely necessary for achieving the desired results at each step along the causal pathway. Some of these assumptions are easily achieved, while others are "at risk".

Theory of Change: The COM-B ToC model

Changing the behaviour and practices of individuals and institutions is a key element of many development interventions. Based on a review of current social science research Michie, van Stralen, & West (2011) proposed the COM-B model of behaviour change which centres around the notion that behaviour (B) occurs as the result of interactions between the three factors capabilities (C), opportunities (O) and motivation (M):

- *Capability*: The individual's psychological and physical capacity to engage in the activity concerned, including the necessary knowledge and skills.
- *Motivation*: All brain processes that energize and direct behaviour, including habitual processes, emotional responding, as well as analytical decision-making.
- *Opportunity*: All factors that lie outside the individual that make the behaviour possible or prompt it.

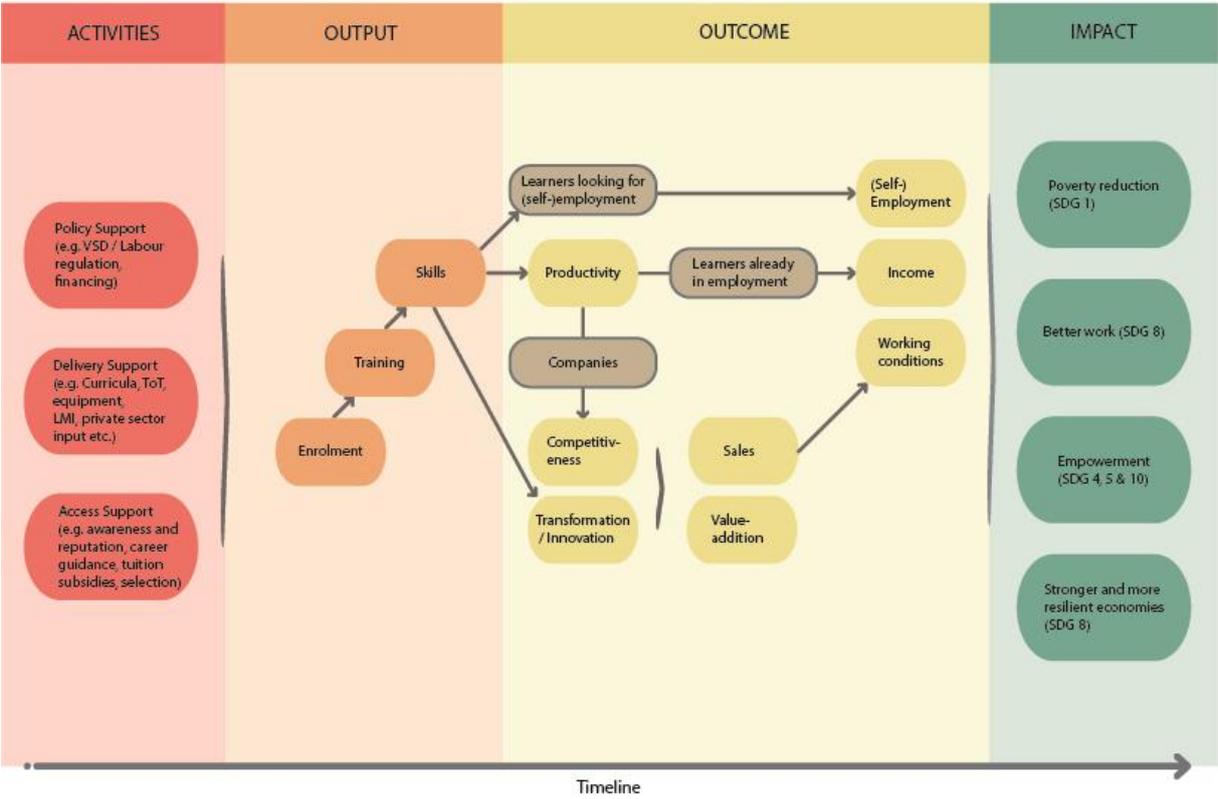
The COM-B ToC model, put forward by John Mayne (2018), contains these further elements:

- *Reach & Reaction*: The intervention outputs are delivered to an intended population. The expectation is that the outputs indeed reach this population and that their initial reaction is favourable.
- *Behaviour Change*: The outputs are designed to enhance capability, motivation and opportunity of the target population, which together lead to the desired behaviour change.
- *Benefits & Improved Well-Being*: These changes in behaviour are then expected to lead to specific direct benefits that ultimately will lead to improved wellbeing.

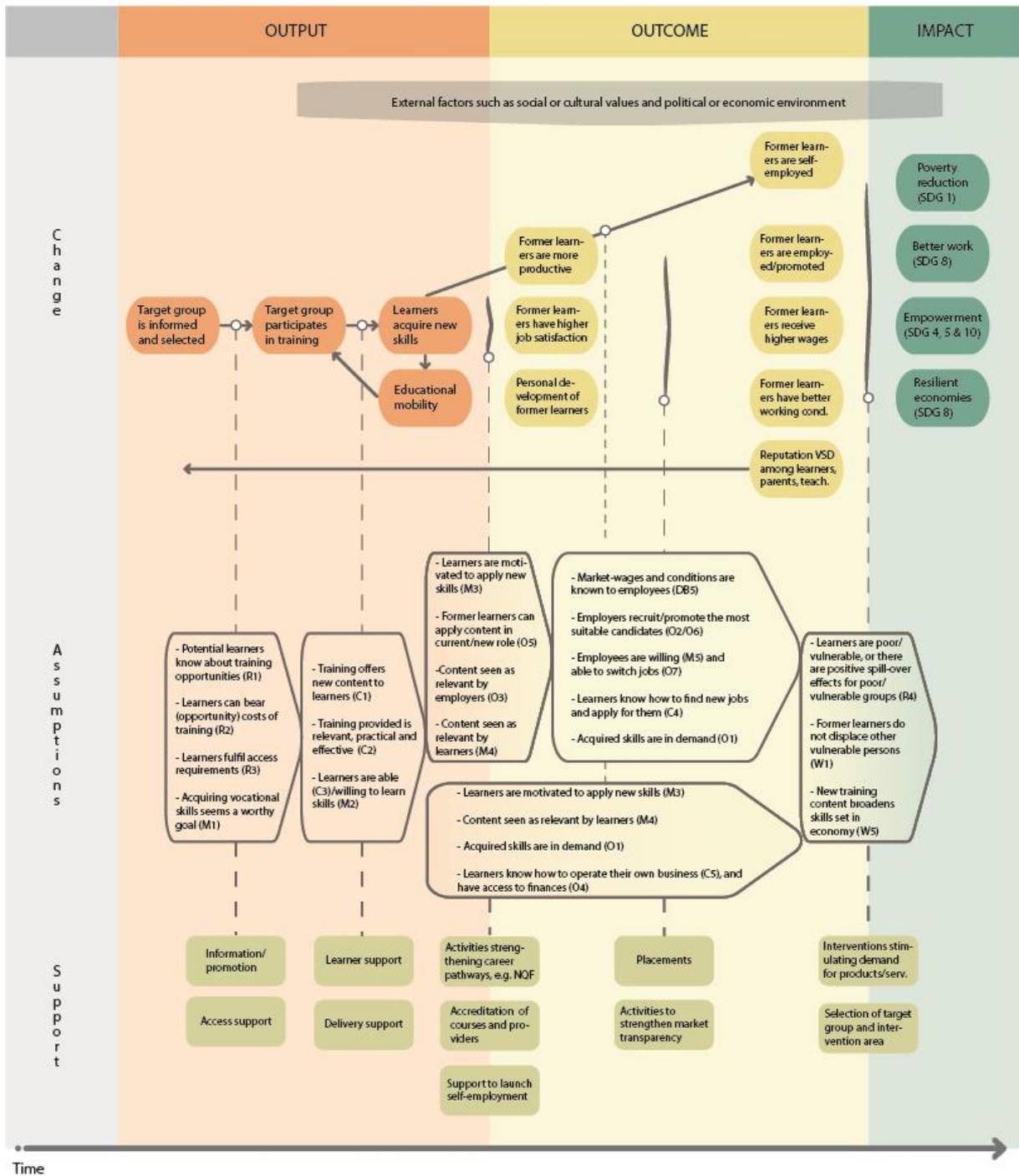
The ToC further specifies *assumptions* behind the causal links in the pathway. These are salient events or conditions necessary for a particular causal link in a ToC to be realised. *Supporting activities* are actions undertaken, often by partners in the intervention, to (help) ensure that the assumptions are realised.

The ToC presented here consists of three versions: the "overview ToC" contains the most important elements and causal links. The two "nested ToCs" for individuals and companies explain in more detail how change is brought about. It should be noted that not all change is necessarily perceived as desirable by all stakeholders (higher wages, for instance), at least not in the short run. But it is nonetheless part of the causal chain. To complete the model, the overview ToC contains some input elements (for a more comprehensive description of input elements, see for example the SDC's introduction paper to VSD (SDC, 2019b). The focus of the nested ToCs and textual descriptions lies on the effects of the training itself.

Overview ToC

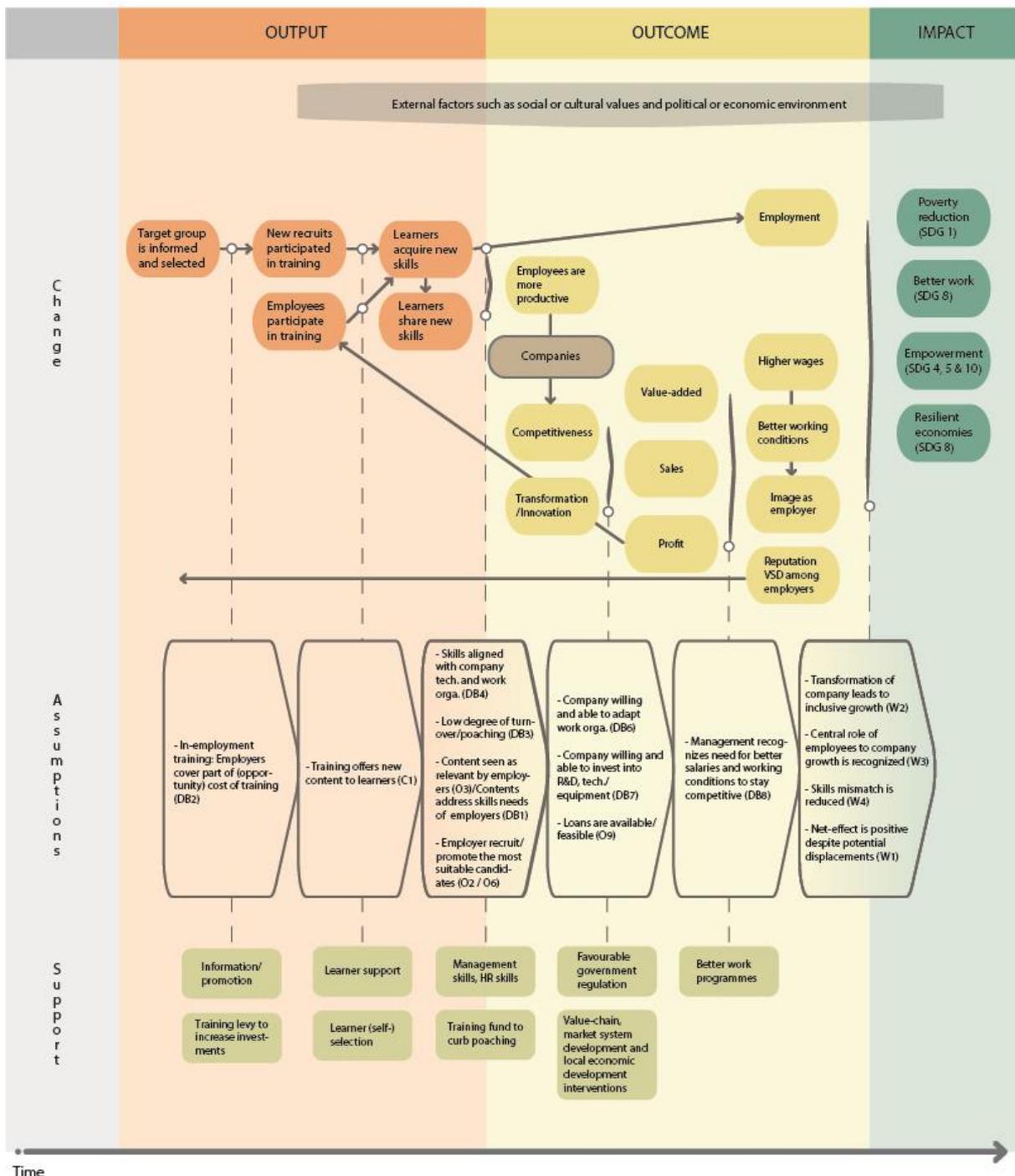


Nested ToC for Learners



Numbering of assumptions in the nested ToC refers to the type of assumption (R = Ready, C = Capability, O = Opportunity, M = Motivation, B = Behaviour Change, DB = Direct Benefit, W = Welfare; see page 1 for definitions)

Nested ToC for Companies



Numbering of assumptions in the nested ToC refers to the type of assumption (R = Ready, C = Capability, O = Opportunity, M = Motivation, B = Behaviour Change, DB = Direct Benefit, W = Welfare; see page 1 for definitions)

1. In depth: Pathways from training to employment

1.1 The employee story

During training, learners acquire new skills and increase their *#capability*. To what extent this desired effect takes place, depends on the learners (e.g. prior knowledge and (learning) skills, *#motivation*), the course (e.g. content, modality, duration) and the learning environment (e.g. teacher-learner ratio, learning support). Before the training starts, various preparatory activities need to ensure that the target group is *#reached*, the course is linked to market needs (*#opportunity*), and that learners, course and learning environment are aligned with each other. Other factors such as education, training and labour market policies or cultural values (e.g. regarding the status of certain jobs, the roles of women and men) also affect outreach and the course delivery.

Once training is completed, former learners look for work. Whether or not they find employment, largely depends on market *#opportunities*: Are there job openings? Are the skills in demand? How much competition is there? Are companies willing to pay a premium for VSD learners? Depending on the target group and market situation, this step might necessitate additional support (e.g. job search coaching; placement services) from training providers, public or private employment services. It can be assumed that most learners are *#motivated* to apply the training content but this would of course depend on their initial motivation to join the training and the culture within the company, including feedback, support and incentives.

Most learners access jobs and income through employment in the formal or informal part of the economy. A second possible avenue, at least in some industries, is self-employment. Again, support – in form of additional training modules (*#capacity*, e.g. on legal requirement or basic bookkeeping), additional coaching or access to micro-credit – might be needed for this step to be concluded successfully. The market *#opportunities* and the selection of the learners (*#reach*) have a direct influence on the success rate and need to be carefully assessed.

A third pathway leads to further education and training. In some programmes, none or only a small number of learners might choose this option while in other cases, the course regularly serves as a steppingstone to further learning opportunities by increasing awareness and *#motivation* as well as enabling learners to fulfil entry requirements (*#capabilities*) of further training (*#opportunity*).

Finally, some of the learners will already be employed (in-employment training). A part of this group is likely to focus on professional mobility within the company or outside it, alongside better wages and working conditions (see chapters 2.1 and 3.1).

Studies have shown:

- Curricula addressing industry needs and respecting the capabilities of targeted learners improve the VSD-to-work transition (Stockmann & Silvestrini, 2011)
- Access to self-employment often necessitates additional supporting activities like micro credits or starting equipment (Khandker, 1998; Maurer et al., 2011)
- Improvement in overall VSD reputation – for example through promotion of flagship programmes, image campaigns or government support – has a positive effect on employability of former learners (Clement, 2014; UNESCO-UNEVOC, 2013)

1.2 The company story

For the training to show its desired effects, employers must recognize the programme, and attach a positive value to it (*#opportunity*). This positive value can concern the technical or the soft/life skills

learned during the training (*#capability*) but could also extend to the selection of the learners: Employers might, for instance, value a certain training because it attracts highly *#motivated* individuals.

Ideally, the company story starts earlier, with companies having a say in the provision of training, e.g. by communicating their skills needs, providing input for the development of curricula and offering *#opportunities* to train learners. In many countries, such interactions between training providers and employers remain a challenge.

The connection between training and employment might be especially fragile for lower level skills in labour markets which are shaped by an abundance of cheap unskilled or low-skilled labour (displacement effects, see discussion in chapter 4.1).

Studies have shown:

- The ADB found that the linkage with employers is the single most important factor in training success. Advisory boards frequently fail because employers do not have the time or incentive to participate, or their representatives are too bureaucratic (ADB, 2009; OECD, 2018).
- Work-based learning thrives if there is an attractive benefit-cost ratio for employers. The ratio depends on aspects such as duration of training, regulations in terms of salaries, facilities etc., and the possibilities for the employer to engage the learner in productive tasks (European Commission, 2013).
- Employers are comparatively more willing to invest in skills of their employees when these skills are quite specific to a company's needs. The extent of their reluctance to invest into general training depends on the competitiveness of the labour market (Acemoglu & Pischke, 1999).

To ensure that training leads to employment, the following *reach conditions* apply:

- Potential learners know about training opportunities (R1)
- Learners can bear the (opportunity) cost of training (R2)
- Learners fulfil access requirements (R3)

These *capability conditions* have to hold true:

- Training offers new content to learners (C1)
- Training provided is relevant, practical, and effective (C2)
- Learners are able to learn new skills (C3)
- Learners know how to find new jobs and apply for them (C4)
- Learners know how to operate their own business (C5)

Furthermore, these *opportunities conditions* have to be fulfilled:

- The acquired skills are in demand: There are local vacancies in the job market (O1), or former learners are willing (M5) and able to move (O8)
- Employers recruit the most suitable candidates, i.e. there is a competitive, transparent and non-discriminatory labour market (O2)
- Content and/or selection into VSD seen as relevant by employers (VSD reputation) (O3)
- Learners have access to finances in order to buy equipment etc. to become self-employed (O4)

Finally, these *motivation conditions* need to be fulfilled:

- Acquiring vocational skills seems a worthy goal for those reached (M1)
- Learners are willing to learn new skills (M2)
- Learners are motivated to apply the new skills (M3)

Note: R = Reach, C = Capability, O = Opportunity, M = Motivation

2. Pathways from training to productivity

2.1 The individual story

If the training involves learners who are already employed ("in-employment training"), the skills upgrade is expected to lead to an increase in performance. This could include the *#capability* to perform tasks faster or with higher precision, or the *#motivation* to take on more initiative and responsibility.

An important condition is that former learners have the *#opportunity* to use their new or improved skill set in their current role, or another role the company assigns to them. Acquiring skills, and the use of these skills in the workplace, improves the feeling of self-efficacy, which in turn can lead to personal growth and empowerment (*#capability*). If the skills cannot be applied, however, training is likely to lead to frustration, which could impact performance negatively.

If learners are not yet employed ("pre-employment training"), a similar dynamic regarding benefits and constraints can be expected. This kind of training might even lead to a more significant increase in *#capabilities*, because the starting skill level of learners is in general lower.

The largest difference between the two forms of training is the bearer of the costs: Learners in pre-employment training often need to pay for themselves, or at least forgo other income ("opportunity cost"). This raises many issues about who has access to training (*#reach*) and negative externalities (e.g. debt, dependencies).

Studies have shown:

- Individual work performance increases with occupation-related training (Barrett & O'Connell, 2001; De Grip & Sauermann, 2012; Groot, 1999). How much performance increases, depends on the specific type of training, participants and context.
- The opportunity to use acquired skills increases job satisfaction of employees (Allen, 2001; CEDEFOP, 2010; Vieira, 2005)
- The feeling of self-efficacy is positively associated with work-related performance (Stajkovic & Luthans, 1998)

2.2 The company story

The company story largely follows the individual one, up to the point where increased individual productivity leads to an overall increase in company productivity and competitiveness. If the trained employees perform tasks more efficiently, the company spends less on each item produced or service offered, is able to lower prices and therefore creates a competitive advantage for itself. It might also be the case that product or service quality increases. *#Opportunities* for improvement depend on the technology, equipment and infrastructure used by the company. Additional spill-over effects are created if former VSD learners share their knowledge with other employees, who have not participated in the training themselves.

On an abstract level, it might be of little importance if the training is conducted in- or pre-employment: What matters to the company is that skills are available and aligned with company needs. One difference between pre- and in-employment training is the cost-bearer, as explained above in section 2.1. Many companies are not able or willing to cover such costs, hence in-employment training remains scarce apart from informal on-the-job learning. Supporting activities such as communication and promotion activities can play a role here, but also financial incentives, e.g. through a training levy. Above all, increasing relevance and hence cost-benefit ratio of training is important.

There are some caveats to the above described linkage between individual productivity and company competitiveness. Net effects can be negative, if the increase in productivity for some members of the team leads to a productivity slump of others. Inefficient management, high turnover rates or poaching are ever present issues in developing economies. Depending on the company experience, there could be a positive or negative feedback loop to the likelihood to invest further into training.

All of the described processes depend on a range of external factors, which are not directly related to training issues. Without a conducive business environment and access to credit for example, company competitiveness might be crippled even if the company is able to hire highly trained and skilled employees.

Studies have shown:

- Training of employees increases co-worker productivity even if they have not been trained themselves (De Grip & Sauermann, 2012)
- The World Bank (2010) summarises estimates for productivity gains through training, ranging from 16% to 67%. The effects depend on the training, the context and the characteristics of companies and workers (Dearden, Reed, & Van Reenen, 2006; Konings & Vanormelingen, 2015; Zwick, 2006).

In summary, to ensure that skills lead to higher productivity, the following *opportunity conditions* apply:

- Former learners can apply content in current or new role (O5)
- Employers promote the most suitable candidates (O6)

Also, this *motivation condition* applies:

- Content seen as relevant by learners (M4)

Finally, following *direct benefits assumptions* need to be fulfilled:

- Contents address skills needs of employers (DB1)
- In-employment training: Employers cover part of (opportunity) costs of training (DB2)
- Low degree of turnover/poaching (DB3)
- Skills are aligned with company technology and work organisation (DB4)

Note: O = Opportunity, M = Motivation, B = Behaviour Change, DB = Direct Benefit

3. Pathways from productivity to income

3.1 The individual story

For learners who were already employed (in-employment training), the question is whether the training will lead to higher wages, and/or better working conditions such as lower risk of accidents, better working hours or more engaging work. If the company is able to use the new skill set, the former learner becomes more valuable to the company. The company has consequently an interest in retaining him or her by offering a better salary and/or working conditions. If the employer is unwilling or unable to offer improvements, former learners might get a better deal at a different company, if they are willing to change their job. This is in particular true if the skills are transferrable and if there is a competitive labour market.

Learners who are just starting out in the labour market or are trying to switch professions (pre-employment training) are likely to reflect on what difference their training will make in terms of salary

and working conditions. Again, this has much to do with the willingness of employers to hire VSD learners and maybe even pay a premium.

Studies have shown:

- VSD has in general a positive effect on various labour market outcomes such as paid employment and individual earnings (Tripney & Hombrados, 2013).
- Summarising labour force surveys from different regions, the World Bank (2010) suggests that country-average returns to training vary between 8% and 17%.
- The return (i.e. additional income) to a year of vocational training is similar to the return to an additional year of schooling, but it usually takes a few years to recover the costs of the training (McKenzie, 2017).

3.2 The company story

New skills and higher productivity can accelerate changes in work organisation and management, as employees and their management recognise more efficient or effective work processes. Changes in terms of technology as well as product and service innovations might also be observed. Such changes can happen in companies of all sizes, including micro-companies and self-employment, even though the nature, extent, and the time lag of such changes might be quite different.

There is an interdependency at work: Skills and productivity can lead to transformation, but transformation can also lead to productivity changes, and different skill needs. The nature of these processes is not linear and includes feedback loops. While many changes might be beneficial for the company and its workers, others will be not.

Higher productivity means that the company can now produce the same product or service at a lower cost or improve its quality. Such changes will, on average, lead to a higher volume of sales, and are likely to improve the profit margin of the product or service. How much sales and profits can be boosted depends on the market for the product/service offered, the competition, the extent of increased operating costs due to higher labour costs and government regulation (including taxation), as well as other factors.

If the company recognizes that decent salaries and good working conditions are important to attract and retain skilled labour, part of the surplus resulting from the productivity increase will be invested in these areas. This in turn would improve the image of the company, at least from the perspective of future job applicants, and possibly beyond, including trading partners and other stakeholders.

The position of the company in the value chain can change if the transformation and innovation is large enough. Companies might start to produce higher-value-added products or they might decide to perform more production steps on-site.

Studies have shown:

- VSD has a positive effect on employment growth and innovation (CEDEFOP, 2011)
- Good management practices lead to improved skills utilisation and higher company survival rates (McKenzie & Woodruff, 2017; OECD & ILO, 2017)

To ensure that productivity/training leads to income, the following *opportunity and motivation conditions* apply:

- Employer employ/promote the most suitable candidates (O2 + O6)
- Former learners are willing (M5)/able to change the job if content can't be applied in current role (labour market efficiency) (O7)
- Loans are available, and macro-economic situation and regulation allows medium- to long-term investments (O9)

Furthermore, following *direct benefits assumptions* need to be fulfilled:

- Employees and employers recognize wage levels (labour market transparency) (DB5)
- Company willing and able to adapt work organisation (DB6)
- Company willing and able to invest into R&D, tech./equipment (DB7)
- Company recognizes need for better salaries and working conditions to stay competitive (DB8)

Note: M = Motivation, O = Opportunity, DB = Direct Benefit

4. Pathways to impact

4.1 Poverty reduction and better work

That more employment and higher wages lead to poverty reduction, seems at first self-evident. Yet the extent of poverty reduction very much depends on who was trained (*#reach*). If the learners were poor, higher wages should lead directly to a reduction in poverty.

If the learners already had a comparatively high income (e.g. supervisors, management) poverty reduction could still be achieved: If the company is doing better through improved management, then sales increase and workers might benefit alongside (higher wages, more jobs, better working conditions). However, technology upgrades or restructuring of work organization could also reduce the number of available jobs (e.g. increased automatization).

Another topic to consider are substitution effects. The positive effect of training on poverty reduction is bound to be much lower, if the recruitment of one trained vulnerable person means another, untrained vulnerable person is not hired. Or worse, someone else loses their job or self-employment becomes unviable due to too much competition. Substitution effects can happen within a local or national labour market, but also between larger regions, through migration, trade and re-location of production sites. While some reallocation of work might be unproblematic or even beneficial for vulnerable people, substitution effects need to be considered holistically when assessing VSD projects.

A better working environment for all can be created if companies understand employees as partners and have an interest in increasing worker satisfaction in the long term. If this leads to higher productivity and more resilient in-company-relations, investing in better working conditions would become a rational choice for companies themselves.

Studies have shown:

- Effects of programs vary across participating learners. In active labour market programs, job seekers with below-average labour market opportunities seem to benefit more (Card, Kluve, & Weber, 2015; Morlok et al, 2018)
- While job placement assistance has substantial substitution effects (Crépon et al, 2013), inflow through migration has small displacement effects (Favre, Lalive, & Zweimüller, 2013). Labour market conditions directly determine the size of the substitution effect.

4.2 Empowerment and stronger and more resilient economies

Learning a new skill set and using it improves the feeling of self-efficacy, which in turn can translate into a broader process of self-development and empowerment. The question is once again who is trained, and therefore empowered (*#reach*). The argument is up to a point similar to the one brought forward in respect to poverty reduction. There is a direct link when training disadvantaged and vulnerable people, and a more indirect pathway when focussing on other better-off groups. Benefits are conditional on the possibilities to use the acquired skills (*#opportunity*). Noteworthy is the possibility of spill-over effects: If a vulnerable person goes through a process of self-development, this might have a positive effect on the persons she interacts with in her or daily life as well. Beyond empowerment, training and (better) employment opportunities might also result in more happiness, better health, less crime, better educational attainment of children and so on. These effects are often difficult to observe, let alone quantify.

If the training is demand-oriented, training programmes are likely to reduce skills shortages and mismatches in the economy. Given that skills-shortages are a frequent worry for employers, this is an important contribution to the labour market and overall economy. The contribution becomes more important on the path of development: While for the poorest countries, infrastructure, access to finance and corruption trump all other problems, labour market regulations and skills needs are becoming increasingly important for employers in middle income countries.

If the trainings broaden the available skill sets in the economy, the scope for transformation and innovation might increase. Governments could strengthen this process by linking industrial policy to training policies and improving the business environment more broadly.

One should not overstate the impact of a single training on empowerment and the economy more broadly. Each course only provides a tiny input to the overall system. If courses can affect how labour and VSD policies are shaped, or showcase how training providers can work together with employers, or how women can work in non-traditional roles etc., courses can have a reach beyond the learners or the companies, and contribute to systemic change.

Studies have shown:

- Effects of training seem to be larger for formal than informal employment which could indicate that VSD supports a shift towards more formal jobs (McKenzie, 2017)
- Social outcomes of training, such as the effect on interpersonal trust and volunteering, does not only depend on the initial formal qualification, but is affected by skills and participation in adult learning (Vera-Toscano, Rodrigues, & Costa, 2017).

To ensure that more and better work lead to poverty reduction, the following *reach condition* applies:

- Learners are vulnerable or there are spill-over effects for vulnerable groups, reducing poverty of vulnerable groups (R4)

Furthermore, these *welfare assumptions need to be fulfilled*:

- Learners do not displace other vulnerable persons, or net-effect is positive despite potential displacements (W1)
- Transformation of company leads to inclusive growth (W2)
- Central role of employees to company growth is recognized (W3)
- Trainings are demand-oriented, leading to a reduction of skills-mismatch (W4)

- New training content broadens skills set in economy, leading to increased flexibility, transformation and innovation (W5)

Note: R = Reach, W = Welfare

Concluding remarks

The generalised ToC can be used as a basis to develop intervention specific ToCs. This will likely mean adding, dropping or concretizing some of the elements to account for the specific features of the intervention and the context.

As the description of ToC linkages has shown, there are many assumptions which have to hold true to achieve an intended impact. Some of these assumptions are, at least in some circumstances, easily fulfilled. Others are much harder to fulfil. Therefore, it is worthwhile to carefully consider which assumptions are "at risk", and what should be done about them.

It is not enough to show that the assumptions could theoretically hold true. The discussion of the assumptions needs to be based on context-specific evidence, taking into account experiences from earlier interventions in a similar context, as well as (local or regional) datasets, studies and reports. Alternatively, evidence can also be provided through a consultation process with local stakeholders.

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