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Measuring the Return on Investment in TVET

Report of the UNESCO-UNEVOC
virtual conference
9 to 16 May 2016

Moderated by
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Foreword

Sustainable Development Goals call on Members States to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" and sets a number of targets related to technical and vocational education and training (TVET). The vision is holistic and the commitment to 'leave no one behind' puts the onus on all Member States to contribute. While such a transformative vision reasserts the importance of TVET to contribute towards the transition towards equitable, inclusive and sustainable societies and economies, it also puts stress on financing structures and forces us to assess how TVET stakeholders can convince others of the benefits of investing in TVET.

It is important to recollect that although TVET systems are directly linked to the needs of labour markets, the benefits of TVET transcends economic boundaries and influences individuals, as well as society both socially and environmentally. TVET contributes to lower unemployment rates but can also help alleviate poverty, increase self-confidence and encourage individuals to become active members in their societies. As well as the different benefits of TVET, country contexts and the multitude of types of stakeholders involved makes measuring, documenting and explaining the return in investment in TVET complicated.

In order to collect input from the global TVET community, UNESCO-UNEVOC organized a virtual conference from 9 to 16 May 2016 on the UNEVOC TVeT Forum. Moderated by Phil Loveder and John Stanwick from the National Centre for Vocational Education Research in Australia, a UNEVOC Centre, this virtual conference sought to inform the wider TVET community about a current research project currently undertaken by the NCVER. The collaborative research project aims to identify and highlight key issues in the measurement of the return on investment in TVET, and the virtual conference was an opportunity for the community to share their ideas, expertise and experiences with the research team.

The virtual conference was attended by 230 experts from 63 countries. The high level of participant engagement across all six discussion topics reflected the importance of UNESCO's activities regarding TVET.

This virtual conference was the fifteenth in a series of moderator-driven discussions introduced by UNESCO-UNEVOC in 2011. Conducted on the UNEVOC TVeT Forum – a global online community of over 4,500 members – and guided by an expert, these discussions provide a platform for sharing of experiences, expertise and feedback. We would like to thank Phil Loveder and John Stanwick for sharing their expertise with the wider TVET community, which we hope will drive the discussion forward and will contribute to the development of TVET at the local, national, regional and international level. We would also like to extend our sincere gratitude to all participants who took the time to share their experiences, knowledge and insights and contributed to the development of this report.

Shyamal Majumdar
Head of UNESCO-UNEVOC International Centre

Introduction

Goal Four of the Sustainable Development Goals (SDGs), as defined by Transforming our World: the 2030 Agenda for Sustainable Development, calls on Members States of the United Nations to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The Goal sets a number of targets related to technical and vocational education and training (TVET), including to, by 2030, "substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" . The vision is holistic and the commitment to 'leave no one behind' puts the onus on all Member States to contribute.

While such a vision reasserts the importance of education, of which TVET is an integral component, to contribute towards the transition towards equitable, inclusive and sustainable societies and economies, it also gives rise to a number of challenges, one of which is related to the financing of TVET. However, while the current international policy developments put more stress on financing structures, issues surrounding funding in TVET are not purely monetary. The recent international attention to the importance of education might encourage governments and other stakeholders to explore the Return on Investment (ROI) from investing in TVET, and understand the different types of benefits individuals, enterprises and governments obtain from investing in training.

Although TVET systems are often considered in relation to labour market outcomes, the benefits TVET brings to individuals, employers and society are not only economic. The country context (political, economic and education system) and the types of stakeholders involved also have an influence on the ROI in TVET. Taking into account all these factors makes measuring, documenting and understanding ROI in TVET increasingly complicated.

As mentioned, understanding the ROI to technical and vocational education and training is important from a number of perspectives. The information is useful to governments as information on the performance of the system and to provide justification for the public expenditure on TVET. Information on ROI is also useful for enterprises to justify their expenditure on training and for individuals regarding the training choices that they make, for instance whether to pursue TVET as a training option or whether to go on to more academic training.

Taking this further, thinking about what constitutes the ROI calculation (i.e. costs or investments in relation to benefits) is also useful in terms of gaining a more nuanced understanding of the measure and its use. That is to say, costs and benefits are not straightforward measures and thinking about what constitute the underlying measures provides a better understanding of what type of investment in TVET is required to achieve a range of benefits.

This is the main interest of a collaborative research project currently being undertaken by UNESCO-UNEVOC, in association with Australia's National Centre for Vocational Education Research (NCVER), Korea's Korean Research Institute for Vocational Education and Training (KRIVET) and other UNEVOC Centres in the Asia-Pacific region. The research aims to explore the different benefits from investing in TVET, and investigates the utility of measuring ROI across a range of countries and stakeholder types. In particular, the broader work investigates:

- appropriate definitions and indicators needed to measure ROI from multiple dimensions and stakeholders;
- suitable methodologies for measuring investment in TVET from existing international studies;
- understanding the importance of establishing appropriate timelines for calculating ROI (quarterly, annually, biannually as examples).

In terms of costs or investments, while they are all expressed in monetary terms not all costs are that easy to capture. Often the focus is on direct costs. At the governmental level this includes direct allocations for TVET. However, there can also be a raft of indirect costs related to training which could include items such as payroll tax exemptions, tools of trade allowances, incentive bonuses and transport costs related to training. These indirect costs are often harder to capture.

The benefits of training can be grouped into three main categories: (i) economic (which relate to higher wages and better job prospects for individuals, to increased productivity and profitability for firms, and to the economy in terms of higher economic growth); (ii) social (which relate to social value not currently reflected in conventional financial accounts); and (iii) environmental benefits (which relate to the goal of sustainability).

CEDEFOP (2011) have outlined some of the economic and social benefits from undertaking TVET at the macro-, meso-, and micro-levels (see figure 1). Looking at the benefits in this way assists in thinking about how some of these elements can be measured.

In Marope, Chakroun and Holmes (2015), arguments for three rationales for the investment in TVET are put forward; the economic growth, social equity and sustainability arguments. The economic argument has always been there. After all, investment in education is generally seen as providing skills for the economy and thereby economic growth. TVET also has a significant role to play in social equity, that is to say expanding access to the skills obtained through TVET as a redistributive strategy. Finally, TVET also plays a role in sustainability. While the concept of sustainability can be challenging in terms of ROI, it can refer to maintaining economic growth while at the same time maintaining (as opposed to degrading) the environment.

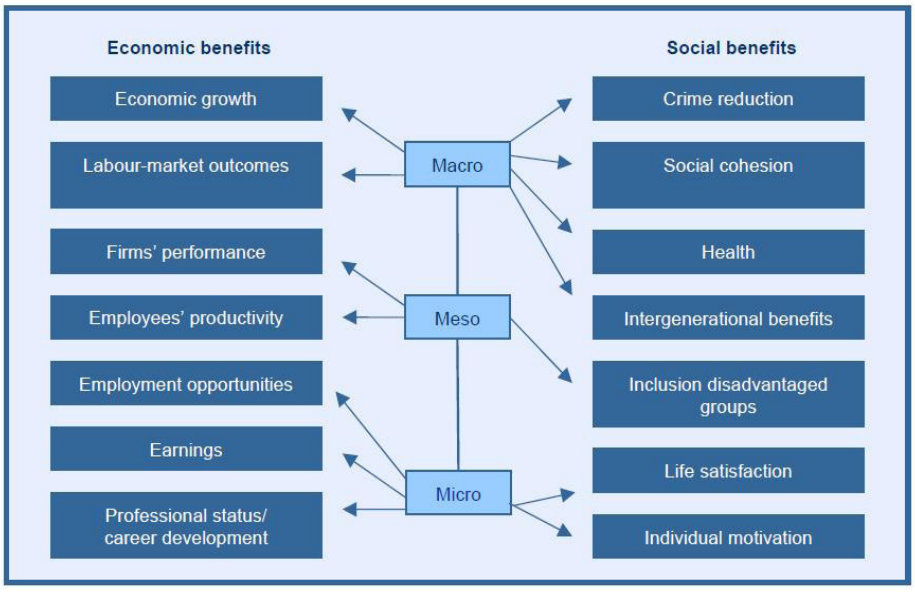
One of the important aspects of the collaborative research project that should not be overlooked is that it is a cross-country study on Return on Investment in TVET. Among other things, the project aims to identify variations between countries as to priorities regarding costs/ investments and benefits in relation to TVET. The priorities also need to be nuanced in terms of the type of TVET system that exists within the countries. Of interest is also the availability of data to measure ROI.

Before progressing to the summaries of discussions that took place during the virtual conference, we provide working definitions of two critical terms: **Return on Investment (ROI)** and **TVET**.

In its simplest sense, **Return on Investment** measures the benefit of an investment relative to the cost of that investment. In the context of TVET, ROI can be defined as gains or benefits derived by individuals, firms, governments or nations from investment (or costs) in training (VET Glossary, 2016). While this is quite a simple statement, in reality ROI can be quite hard to measure for a number of reasons. It is hoped in this virtual conference to begin to address this issue.

Technical and vocational education and training is understood as comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods . TVET, as part of lifelong learning, can take place at secondary, post-secondary

Figure one: The benefits of vocational education and training



Source: CEDEFOP 2011, Research paper 10, The benefits of vocational education and training

and tertiary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to national and local contexts. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET.

Objectives and scope

Two hundred and thirty participants from 63 countries took part in the virtual conference hosted on the UNESCO-UNEVOC TVeT Forum from the 9 to 16 May, 2016.

The virtual conference provided an opportunity to solicit specific ideas, experiences and knowledge from the wider TVET community to strengthen and validate the initial bases for measuring ROI and identifying indicators which has formed the basis of a broader international study on understanding economic and social returns to investing in training.

Main questions under discussion

How could information on Return on Investment benefit the TVET system of your country?

Understanding the different ways ROI information is used in different countries could provide some indications as to what should be concentrated on when looking at ROI in TVET. Is information on ROI used for national reporting, does it inform government funding decisions, or does it encourage the private sector to invest?

Which types of Return on Investment are most important or relevant to your own country's context?

There are many different dimensions to return on investment and many areas of interest at different levels. For example, the Return on Investment in TVET can have economic, social and community impacts, to name a few.

What are some of the challenges when comparing ROI in TVET across different countries? How do we take into account the differing political, cultural and educational contexts when comparing returns?

In order to develop a common understanding, each dimension of ROI should have very specific and concrete definitions. These definitions should be consistently applied to each country and the definitions need to relate to something that is measurable. How can such specific and concrete definitions be developed?

What data sources are currently available in your country to measure the ROI in TVET? What are the gaps and how can these gaps be addressed?

It is critical to think about what types of sources of data are available to measure the costs/investments and benefits of TVET in each country. Importantly, when thinking about costs there is a need to consider not only direct costs but also indirect costs (which may be harder to capture). Similarly, there is a need to consider both tangible and intangible benefits. Where are there information gaps in your country and how can such data be collected? In addition, is there an ability or willingness to create local partnerships to support data collection or access?

Towards an ROI Framework: What should a suitable framework look like?

What decisions are necessary to arrive at a cohesive model or framework? Answering this will help in developing an ROI model which has broad application to TVET.

Structure of the discussion

The discussion was organized in a number of threads. While the initial discussions centred on the different types of information on ROI, and the relevance of the different types to different country contexts, the latter threads focused on the challenges comparing ROI in different countries, and the data sources available to measure ROI. The virtual conference finally discussed what a suitable ROI framework could look like.

Summary of the virtual conference discussions

The discussions focused on five questions and as the virtual conference progressed it became apparent that all the topics at hand were closely interlinked and to some extent built on each other with later discussions referring to threads that occurred earlier in the week. What follows is a summary of the discussions that took place in the five virtual conference threads.

1. Information on Return on Investment

How could information on Return on Investment benefit the TVET system of your country?

Understanding the different ways information on return on investment is used in different countries gives an indication on what the focus should be when looking at ROI in TVET. There was quite a bit of discussion on this topic and there were a number of salient points raised.

First and foremost, information on ROI can play an important role to convince stakeholders to invest in TVET and furthermore can help raise the image of TVET. This is summarized by the following quote from Kenya.

> "The information on ROI will benefit the TVET system in Kenya particularly in funding all levels of TVET since TVET is more expensive to run as compared to other traditional non-TVET education"
>
> (John W Simiyu, Kenya)

The above point is particularly relevant taking into consideration the competing demands for (often) limited funds. The following quote from Ghana typifies this point.

> "I think if more information on ROI in TVET was available in Ghana, it would make it easier for TVET advocates to lobby for funding and also engage private investors. It would also help to raise the image of TVET in Ghana if there is clear evidence for the economical and societal benefits of TVET"
>
> (Lisa Freiburg, Ghana)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The following quote expands on this by pointing out how information ROI can assist garnering private investment in TVET.

> "Policymakers should have evidence and fact-based (information) as a basis for crafting policies for TVET. The ROI would also provide basis on how the government could support the private enterprises. From the point of view of the private sector, the ROI is critical for investment purposes"
>
> (Ursula Mendoza, Philippines)

Furthermore, in many countries, TVET is largely publicly funded and with good reason. The skills obtained through TVET are seen as a fundamental component of economic growth and development. However, there is also often some private component of funding that the system relies on. In developing countries this is often in the nature of donor support.

> "TVET is critical to the development of a lot of economies and Ghana is not an exception, TVET and skills development have contributed in enhancing livelihoods and job creation. For this and other reasons the Government leads the financing of TVET and skills development. This is sometimes done with our development partners and private sector entities"
>
> (Samuel Thompson, Ghana)

While participants recognized that information on the ROI of TVET can provide evidence on the value of TVET, participants saw that there is often a lack of relevant data to measure ROI. Data on both inputs and outputs/outcomes is required, but information on the outcomes of TVET is often insufficient. Part of the problem could be a lack of focus on ROI (or evaluation). One of the participants from Australia mentioned that in Australia funding seems to be allocated on the basis of inputs and not so much outcomes which are needed for ROI calculations. A participant

from Ireland mentioned that in Ireland they have more recently moved to an input/outcomes approach to make more use of limited resources.

(More than one) participant made reference to the various types of models available for measuring ROI, including; Social Return on Investment (SROI), Internal Rate of Return (IRR), Cost Benefit Analysis (CBA), Net Present Value (NPV) and Return on Equity (ROE).

The Kirkpatrick and Phillips model for evaluating the impact of training (see for example Phillips, 1996, 2011) in particular was discussed which has five levels ranging from satisfaction with the training and plans to use the learnings at level 1 through to calculating ROI from the training at level 5. The model and the appropriate time frame for each level of evaluation to occur are represented at figure 2.

On this theme, participants pointed out that a lack of evidence of ROI can have the opposite effect, i.e. it can result in decreased funding. This was mentioned by a participant from Trinidad and Tobago in the context of supporting data not been collected at a time of significant investment in TVET to raise the skills profile and develop the economy.

In terms of lack of information, outcomes that may be less quantifiable (such as social and environmental outcomes) are also less likely to have good outcome information. This theme also came up in subsequent threads, specifically the thread on day four of the virtual conference regarding data sources and data gaps. This theme is succinctly put in the following quote.

> "From my experience, what prevents governments from providing evidence on ROI in TVET is the lack of reliable data"
> (Lisa Freiburg, Ghana)

An interesting point was raised by one of the participants in that the ROI might not always be positive. Negative ROI occurs when the outcomes achieved are outweighed by the inputs. While this might not see useful information in terms of garnering support for investment in TVET, it is still useful in terms of providing information to help improve the system.

> "An evaluation study that results in a negative ROI, but that includes a scorecard with information at all levels, includes valuable information to be considered in order to identify issues and find opportunities for improvement"
> (Javier Amaro, Australia)

A comment was made from Australia that from a marketing perspective, customer satisfaction can be seen as an outcome of TVET programs. Hence ROI can be construed in terms of measuring customer satisfaction (at various levels).

Figure two: Kirkpatrick/Phillips Evaluation Model

KIRKPATRICK/PHILLIPS EVALUATION MODEL

Levels of Evaluation	Measurement Focus	Time Frame
Level 1: Reaction	Participant reaction to a learning program	Conclusion of program
Level 2: Learning	Degree to which participants acquired new knowledge, skills or attitudes	Conclusion of program or within 6 to 8 weeks after
Level 3: Behavior	Degree to which participants applied back-on-the-job what was learned	2 to 12 months
Level 4: Results	Degree to which targeted business outcomes were achieved	9 to 18 months
Level 5: ROI	Degree to which monetary program benefits exceed program costs	9 to 18 months

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2. Types of Return on Investment

Which types of Return on Investment are most important or relevant to your own country's context?

There are many different dimensions to return on investment and many areas of interest at different levels. For example, the ROI in TVET can have economic, social and community, and environmental impacts, to name a few. As mentioned earlier, Marope, Chakroun and Holmes (2015) in their publication on unleashing the potential of TVET specifically refer to economic, social equity and sustainability outcomes of TVET.

While it became clear that both economic and social aspects of ROI were very important in participants' countries, participants made comments across a few important issues related to this question. First and foremost, the objectives of the particular TVET system will guide the measurement of ROI. For instance, if an objective of TVET is job creation for unemployed youth then the ROI measurement should reflect that. Similarly, if one of the objectives relates to social equity then the ROI should reflect that. The following quote summarizes this succinctly.

> "The objectives of a National TVET programme of any country will also guide the factors for measuring the ROI"
> (Emamorose Felix, Nigeria)

Having said this, many of the countries have a large focus on the economic aspects in ROI in the first instance. Ultimately there is ROI in terms of national productivity and TVET can be seen as part of a broader investment in a nation's economy. But as we move down the levels of benefit shown in figure 1, participants referred to other aspects of economic ROI such as employment after training, youth employment rates, employer satisfaction, employability skills, and a reduction of those not in employment, education or training. This does not mean that social outcomes were not important but that rather the economic outcomes could be seen as an antecedent to the social outcomes.

When discussing employment outcomes at least a couple of the participants stressed that it was not only employment per se that was important, but also the quality of that employment (and that this should be measured). Related to this point it was raised that the TVET system should be in touch with market demands and develop skills that are 'saleable'.

> "How many TVET graduates will find employment - often in the informal sector - in a totally unrelated field? And more importantly - is the employment sufficient to sustain one's livelihood and grow their income and improve their situation over time?"
> (Lisa Freiburg, Ghana)

Youth employment was seen as being important to some participants and particularly so as it relates to early school leaving. Early school leaving is seen as having potentially negative consequences, not only in terms of future employment but also in terms of broader social outcomes (see e.g. Hancock & Zubrick, 2015 for a review). A participant from Malta further stressed that TVET has a role in mitigating the size of the group that is not in employment, education or training (NEET) in that country. Hence, ROI related to the educational system was seen as important.

> "We are facing relatively large number of early school leavers for our secondary school system, which apart from economic value has a larger social value/ impact. I believe that it is within this context, which might vary from one country to another that one should account for ROI of educational systems"
> (Martin Borg, Malta)

Social aspects of ROI were of considerable importance to participants but it was pointed

out that the economic and social aspects of ROI are interlinked. For example, increases in employment can also lead to a reduction in crime levels. Moreover, increased levels of employment also can result in greater social cohesion. This reiterates the point about economic outcomes of training (e.g. employment) being seen as an intermediary between the TVET training and the social outcomes. The quotes below typify the links.

"Economic and the social returns are very relevant, in the sense that providing skills training to youth and adults provides employment opportunities, promotes entrepreneurship, and goes a long way in reducing crime, increasing social cohesion and achieving peaceful co-existence"
(Hannatu Garba, Nigeria)

"In my country of Nigeria both the economic and social returns are very important in that TVET provides skills for employment as well the promotion of values. An employed individual will contribute to the economic development of the country and in-turn this can reduce the risk of social vices"
(Ogu Samson, Nigeria)

"The economic and social domains of ROI from TVET are inextricably linked. Appropriately employed persons will, for the most part, be comfortable and as such contribute significantly to the social and economic well-being of the country"
(Halden Anthony Morris, Jamaica)

One participant did point out that the social outcomes occur over a longer time frame and that this presents challenges for measurement.

"Social returns and the benefits of the community will take longer period of waiting and measuring the ROI is challenging. But it is more relevant since we are talking here of the benefits of the community and not ROI on individual only"
(Ursula Mendoza, Philippines)

Figure three: What types of returns to TVET are most important?

Individuals	Employers	Wider Community
Employability	Productivity	Labour market participation
Productivity - skill gains	Efficiency	Labour force productivity
Earning capacity	Employee workplace literacy	Increasing the tax base
Literacu skills	Business innovation	Social cohesion
Training pathways	Organisational culture	Social inclusion
Wellbeing	Motivated workforce	
Engagement		

Figure three summarizes some of the important measures of ROI in TVET classified by individuals, employers or firms and broader community benefits. This has been prepared from an extensive review of the literature and additional feedback provided during the virtual conference.

3. Comparing Return on Investment

What are some of the challenges when comparing ROI in TVET across different countries? How do we take into account the differing political, cultural and educational contexts when comparing returns?

In order to develop a common understanding, each dimension of ROI should have very specific and concrete definitions. These definitions should be consistently applied to each country and the definitions need to relate to something that is measurable. Participants raised a few challenges in comparing ROI across countries. At the very broad level the countries operate in different contexts. Participants considered this diversity in different ways.

Firstly, there is a large diversity of sectors within TVET and different emphases within different countries. It was pointed out in the background to this report that TVET encompasses a broad range of components and settings even with a given country. This provides considerable challenges in comparing ROI measures and as such has implications for how TVET is defined for exercises such as this. The following quotes illustrate these challenges.

"(TVET) comprises formal, non-formal and informal learning and takes place across a wide range of settings, some in schools others in public and private vocational centers. Availability of statistical data to be used is a challenge. The economic, political and environmental conditions under which data was collected and the standard under which (if data is available) was gathered poses a challenge in comparisons of (ROI)"
(Hannuta Garba, Nigeria)

There are some terminologies that are associated with TVET, i.e., formal, non-formal, informal, TVET schools and institutions, higher education, alternative learning, postsecondary education, enterprise-based, apprenticeship, learnership, dual training system, dualized training, polytechnic and many more. These terminologies define how each country look at TVET"
(Ursula Mendoza, Philippines)

In general there are many contextual differences between countries. These can for instance be political and cultural. There is however also other contextual issues to consider. These include the demographic features of the country such as the age profile, urban versus regional density and gender distribution. In addition, the level of experience (maturity) in managing education and training, and the various stakeholders in the system need to be considered in any cross-country comparison. Participants made a few pertinent comments in this regard such as the quote below.

"The immediate challenges comparing ROI across countries will be reflected in constraints based on the differing political, cultural and educational belief systems and practices"
(Fitzroy Marcus, Trinidad and Tobago)

Yet another important consideration is how the TVET system is funded (public versus private) and the management information systems that are available. The following quote highlights the public/private funding consideration.

"Another significant challenge is the varying levels of public-private partnerships that exist in the various countries. In several instances, the TVET system is driven primarily by Government funding whereas in other cases/countries, the private sector assumes some responsibility"
(Halden Anthony Morris, Jamaica)

There are inherent difficulties associated with gathering information on private expenditure on training. This can relate to there not being the same requirement for reporting as there is for government expenditure. Even all of government expenditure can be difficult to obtain such as where it pertains, for example, to the more indirect costs of training.

On a different tack the point was raised that a lack of co-ordination or lack of central coordinating body in the system can lead to a lack of or fragmented data. So a degree of central coordination is an important consideration. Related to this, there are challenges for having reliable and timely Management Information Systems (MIS) for the collection of data for ROI calculations. These challenges are summarized in the following quotes.

"In the context of Nigeria there is lack of coordination and linkages among the various sectors of TVET which results in lack of data or records"
(Ogu Samson E, Nigeria)

"Currency of data continues to be a challenge. In some cases, available data are quite dated (3+ years). There is absolute need to establish reliable information management systems in all Caribbean countries"
(Halden Anthony Morris, Jamaica)

"The TVET landscape in Ghana involves quite a number of stakeholders. These stakeholders cut across the Private and Public sectors, Ministries Departments and Agencies as well as the formal and Informal sectors. To add to this are the investments made through special support programmes and the activities of CSOs. This mix requires a serious effort to aggregate data in all areas that are usually captured in formats specific to the institutions that generated the data and therefore working with them calls for a triangulation of the data"
(Samuel Thompson, Ghana)

Given these quotes it is apparent that measuring ROI related to TVET within a country presents considerable challenges let alone cross-country comparisons of ROI. One participant mentioned the need for a framework to measure ROI and these theme is discussed further later in the conference.

> "Comparison of ROI across countries may be a tall order unless there is a framework that can be used to measure ROI across those countries"
> (John W Simiyu, Kenya)

One of the participants raised quite a relevant point in that it may be of interest to examine how other sectors are dealing with similar issues. There is no doubt that if ROI measurement is challenging for TVET, then it is also challenging in other sectors as well. The example that was raised referred to how young people not engaged in employment, education or training (NEET) are compared across countries. This is due to fact that the definitions of employment, education and training are quite broad and include both the formal and the informal. Surveys on this, which are country specific, capture fairly broad definitions of work that do not use terms such as 'formal' and 'informal' and take account of regional differences, making this survey approach an interesting example and may be worth examining.

4. Return on Investment data sources

What data sources are currently available in your country to measure the ROI in TVET? What are the gaps and how can these gaps be addressed?

It is important to think about what types of sources of data are available to measure the costs/investments and benefits of TVET in each country. Importantly, there is a need to consider not only direct costs but also indirect costs, as well as both tangible and intangible benefits which may be harder to capture.

Borhene Chakroun, Head of the Section of Youth, Literacy and Skills Development at UNESCO, pointed out during the virtual conference that there are certain types that should be collected for measurement of ROI. These include:

- Administrative data sources (including from training providers and relevant Ministries with portfolios pertaining to Education, Employment and Social Security);
- Survey data (labour force surveys and other household surveys);
- Assessment data for example UNESCO's Literacy Assessment and Monitoring Programme (LAMP), the OECD survey of adult skills (PIAAC), and the World Bank's STEP Skills Measurement Program; and
- Benefit from big data analytics.

While these are data sources that ideally should be collected and/or used, participants reiterated the challenge of data gaps in the collection of information for ROI, particularly for less tangible data. These challenges follow on quite clearly from what has been said in earlier threads. An example of less tangible data at the level of the economy is increased social cohesion. The question then arises as to how these types of intangible benefits can be quantified, or indeed monetized, and in addition whether they should be. For some examples of ROI, it may be worth considering the collection of qualitative data.

> "We should make a difference between what for returns on investment we can (or want to) prove with quantitative information, and what we would need to prove with qualitative information. Maybe when we know this, then we can develop an integrated strategy to collect this information and address better the structural problems that create information gaps"
> (Wouter de Regt, Germany)

The area of guidance counselling was mentioned as an example that could be looked at in the collection of more qualitative ROI data.

> "I remember guidance and counselling programmes using statistics of absenteeism, or leading large scale survey targeting parents of students, to get a better grasp on dimensions like impact of TVET on motivation or self-confidence of the students...maybe another path to deepen?"
> (Jean Hautier, Germany)

The various stakeholders involved in data collection can provide information to use for ROI calculations but having said this there are still challenges in obtaining the data from them. In particular, there needs to be overall coordination in the collection of data and knowing

what specific information is needed for ROI calculations. This is a point that was raised in an earlier thread and clearly quite important.

"To reduce the gaps there is need for proper coordination of stakeholders' input"
(Amina Idris, Nigeria)

"While we can easily pinpoint where to get the data, the issue is how, what specific data needs from where and the questionnaire to be used. We should identify the objectives, what indicators are relevant to avoid wastage of time and resources"
(Ursula Mendoza, Philippines)

Another valid point that was raised by participants was that where there is data, it is not always in a form that is useful for the calculation of ROI. Hence there is a need for collecting and using data so that it can be useful for measuring or understanding ROI. This is clearly something that needs to be thought about when initially setting up data collections.

Taking the previous point further, participants raised as an additional challenge the development of standard indicators from the data that can be used for comparisons. This will be challenging because of the diversity inherent in TVET systems.

"(There is) no certainty that the methodology and tools used to capture and analyze data would readily allow measurement at the ROI level for TVET.... there is much more work to be done to facilitate use of best practices in measurement of ROI in TVET"
(Fitzroy Marcus, Trinidad and Tobago)

"In Jamaica there are several data sources that are available which I believe could provide a measure for ROI in TVET. However, these sources are not configured to provide accurate and timely measures on ROI"
(Halden Anthony Morris, Jamaica)

5. Towards an Return on Investment Framework

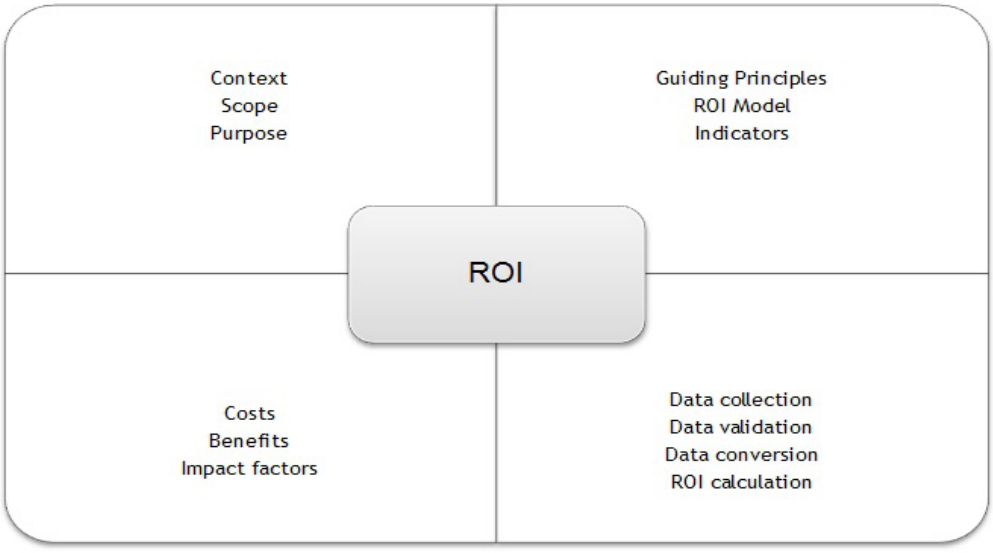
Figure four, which was presented at the virtual conference, summarizes the issues that the available international literature indicate should be considered in developing an ROI Evaluative Framework.

In understanding this diagram and starting from the left top quadrant, it is important to understand that ROI is context specific to the stakeholder and relative to the operating environment. In relation to scope and purpose; understanding who are the stakeholders and what do we measure and why is important and needs to be established right up front.

In relation to guiding principles for ROI, a consistent and standard frame of judgement needs to be applied. The ROI model should be customized, fit for purpose, and measure what matters. It should be practical, and where possible be useful, feasible and customisable.

The model must be supported by sensible indicators, practical measures and the availability of quality data and use

Figure four: Theoretical ROI Evaluation Framework elements



Source: Schueler J (forthcoming)

scientifically valid techniques which seek to address the influence of other factors.

Participants in the conference discussed the need for common understandings, as well as the need for an inter-sectoral approach, which could help link the analysis of TVET systems with intended development outcomes. To this end, UNESCO's integrated, analytical approach put forward in 'Unleashing the Potential. Transforming Technical and Vocational Education and Training' (Marope, Chakroun & Holmes, 2015) was considered. As was discussed previously, the approach combines economic growth, social equity and sustainability concerns in a balanced and strategic manner and considers that:

- Economic growth incorporates productivity and growth, employability, employment creation and new modes of work.
- Social equity incorporates redistribution of both material and intangible wealth and inclusion.
- Sustainability incorporates greening economies and sustainability.

The following quotes illustrate some of the participants' ideas regarding the development of a framework.

"One of the first steps we need to take is to come to a common understanding about what we mean by TVET...(...) we need a definition which is encompassing enough to allow for regional differences, but specific enough to be able to elicit some indicators. A suitable ROI framework needs to have a bottom up approach, where national actors evaluate the important ROI in their countries, come together on a regional level to find commonalities, and then these regional commonalities get discussed on the international level"
(Wouter de Regt, Germany)

"There is a fundamental problem that our discussion on ROI should address, for instance the absence of a suitable, shared and inter-sectoral approach which could help to connect the analysis of TVET systems with intended development outcomes (...).In an attempt to address this problem UNESCO proposed an integrated, analytical approach that combines economic growth, social equity and sustainability concerns in a balanced and strategic manner"
(Borhene Chakroun, France)

"I would suggest that a suitable ROI framework across various regions should adopt adequate networking and inter-regional collaboration as well as partnerships. There is also the need for knowledge sharing among regions"
(Obukwor Ngozi, Nigeria)

Conclusions

There were some quite clear themes running through the discussion over the five days of the virtual conference.

Firstly, information on ROI is seen as a valuable tool in arguing the case for funding (or increased funding) of the various aspects of TVET. Extant research and the experiences shared during the virtual conference have shown that there is evidence of positive outcomes from investment in TVET.

It became clear from the discussion threads that any measurement of ROI should be closely aligned to the objectives of the TVET system in a country. Generally, however, ROI measures related to the economic outcomes of TVET (e.g. employment related outcomes) are seen as being critically important across all countries. Social aspects are also critical, and tie into the objectives of the systems, but these social measures are often indirectly linked to the economic ones requiring more evidence to establish the link. For example, a reduction in crime among young people was seen to be linked to improvements in young people in employment.

Secondly, measuring ROI in a given country has its challenges but the diversity of TVET systems and the differing contexts of the countries pose considerable challenges for cross-country comparisons of ROI. How do we develop measures of ROI that can be compared across countries? Some participants suggested that other sectors outside of TVET (for example employment) might provide some indicators as to cross-country comparisons.

The other challenge in measuring ROI, and this was seen as a huge challenge by participants that cannot be underestimated, is having appropriate data to enable the measurement of ROI. This challenge has several aspects to it including:

- The need to have ROI in mind when setting up data collection and linking it back to the objectives of the TVET system.
- The co-ordination of the data collection across the relevant stakeholders that may provide data.

- Setting up appropriate Management Information Systems for the collection of data.

- The need to consider broader approaches to the collection of ROI where the information is less tangible, for example, qualitative data collection.

The virtual conference was a very useful forum for exploring some of the conceptual issues surrounding the measurement of ROI. From the perspective of the moderators of the conference, they were very grateful of the high-level of quality debate and input to the various topics. The outcomes of the virtual conference will feed into the broader project which is underway and participants and readers are invited to continue the dialogue with the NCVER moderators directly as the research develops.

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References

CEDEFOP. 2011. Benefits of vocational education and training in Europe for people, organisations and countries. Thessaloniki : European Centre for the Development of Vocational Training.

Hancock, K.J. and S.R. Zubrick. 2015. Children and young people at risk of disengagement from school. Available at: http://www.ccyp.wa.gov.au/files/Literature%20reviews/Literature%20Review%20-%20Children%20and%20young%20people%20at%20risk%20of%20disengagement%20from%20school%20-%20August%202015.pdf.

Marope, P.T.M., B. Chakroun and K.P. Holmes. 2015. Unleashing the potential: Transforming Technical and Vocational Education and Training. Paris: UNESCO.

Phillips, J, 1996, How much is the training worth? Training and Development, 50(4), 20-24.

Phillips Associates. 2011. Construct the ultimate multiple choice test: Stop measuring recall and start measuring application. Presented at CETS Conference August 16, 2011. Accessed at http://www.slideshare.net/ChicagoeLearningShowcase/phillips-multiple-choice-level-2-eval-cets2011slides .

Schueler J. Forthcoming. Evaluation framework measuring Return on Investment (ROI) in TVET. Adelaide: National Centre for Vocational Education Research.

Participation

Number of participants: 231
Number of countries from which participants came: 63

Network Members: 84 (36%)
Male: 136
Female: 98

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