Managing Workforce Potential

A 20/20 Vision on the Future of Employment Services

With contributions by Natalie Branosky, Silvia Dusi, Pierre Georgin, Regina Konle-Seidl, Sang Hyon Lee, Fons Leroy, Jacqueline Mazza, Willem Pieterson, Sally Sinclair

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Foreword

Dear reader,

The future of work starts now. With it come all the opportunities and risks of digitization, global business, and worker mobility. For us at WCC, this means that we continue to shape the story we have been telling ever since we started to offer smart search and match software to the Employment Market:

"People need help to make the right choices at the right time. Smart software can provide that help. And software becomes smarter when it leverages knowledge about the world, occupations, skills, and the business you work in. Only then do you get meaningful results that matter."

This book is a contribution to that story.

This publication was put together with the kind assistance and advice of Miguel Peromingo. It was a privilege to receive the many valuable contributions from Australia to the USA and from universities to employment service experts. We chose the angle

of governance and partnership to open a high-level discussion on how to modulate the future labor market for the good of both workers and employers.

In this future labor market, knowledge is what will make the difference. And so, we would like to spread this knowledge. Both knowledge shared by experts in your business, and our own knowledge about managing workforce potential, accumulated over the past 20+ years in cooperating with our customers and partners. From our own area of expertise – information technology – we offer insights into the evolution in search technology and describe how to deliver many of the essential PES services using one central software platform.

This take on governance and technology is an invitation to public employment services and other staffing organizations to discuss the future of work and share their crucial experiences. Above all, we keep in mind the customer: at the end of the day, all governance and technology serves the companies searching for skilled workers and the workers looking for the next step in their careers.

Best regards,
Jan Jensen
CEO at WCC

If you have enjoyed reading this book, please let us know: share your thoughts on www.pesep.org or contact us via info@wcc-group.com. We may follow up with another publication, centered more on the day-to-day business of employment services. Mixing and involving both levels, the governing and the servicing one, is a key to successful labor market management. That is also our approach for our series of webinars about different employment topics, which you can watch on www.pesep.org

Introduction

NESA is delighted to write the introduction for this rich and timely resource for those interested in Public Employment Services. Each chapter offers valuable insights into how PES[1] can respond to the imminent challenges society and governments face in the rapidly changing world of work. This volume provides information and ideas to support PES playing a critical role in ensuring productive and inclusive labor markets as our economies transform.

PES fulfill a crucial social function. We live in societies where finding and maintaining stable employment is often requisite not only to individual financial self-sufficiency, but beyond that to questions of individual purpose, self-image and mental health that collectively have significant impacts on the socio-economic status of a nation. Responsible governments cannot sideline the employment question, and as all of the contributors to this volume are aware, and many have pointed out, the accelerating pace of change in labor market dynamics makes the role of PES ever more central to the socio-economic health of modern, inclusive, and future-thinking nations. Most nations track the beginning of their own variant of PES to the middle of the 20th

1 See page 132 for an overview of abbreviations used.

century if not later. Still, within this short historical timeframe, the sector the world over has had to evolve rapidly.

Jacqueline Mazza (Chapter 8) shows that where many nations began with single government-run PES, all such structures are now giving way to more elaborate partnerships, ranging from a predominantly national body working in association with small, specialized non-government providers (currently the most common arrangement in OECD nations), right through to the sophisticated, fully-contracted model seen in Australia. This evolution may initially have been driven by a combination of changing demographics, broadening PES scope, and shifting economic pressures, but more recently, as we are all too aware, a new dynamic has emerged. Beginning in the 1990s with the advent of the publicly accessible internet – the so-called "information superhighway" – and increasing exponentially since, changing information technology has fundamentally altered the social landscape, and with it, many key variables of the labor market. The availability and exchange of information is radically different now to what it was just a generation ago. Social values and experience are changing, and with them the world of work.

Natalie Branosky's discussion (Chapter 7) of the *sharing economy* is a fine example of the kinds of radically different employment concepts that have emerged in recent times, challenging the cherished notions of "work", "employer", and "employee" upon which most of the logic of employment services has been constructed. Fons Leroy's discussion (Chapter 6) is an important observation of how traditional job and diploma categories are becoming a restrictive way of imagining both job descriptions and competence matching, and calls for a more fine-grained approach based on more specific, more personalized and more transferrable "competencies". Jobs and jobseekers imagined in terms of constellations of competencies promise much more effective matching.

As Dr. Willem Pieterson (Chapter 5) points out, where historical change might once have been imagined or perceived in terms of discrete events, it is now not only constant, but accelerating. The results of this are many, but one that is particularly pressing is the need for all sectors involved in public policy to stop investing in *catch-up solutions*. In the

current labor market environment, if any system or industry is to have a future, it has to be nimble: its systems have to be modular and adaptable, and policymakers have to be responsive and even *anticipatory*. As argued in Chapter 4, the best solution for complex problems such as employment is no longer to wait for the problem to occur and only then to try to solve it. Where this may have been a workable approach to social issues in the 20th century, the simple pace of change means that it no longer is.

Solutions to the question of employment now cannot simply analyze those who have become disenfranchised and ask "what can we do?" Effective PES approaches must analyze the labor market dynamics that threaten to disenfranchise people in the first place, and work to head off the problem before it occurs. Any analysis-response, no matter how streamlined, will take time, and time is the very variable that is rarefying. We must respond so rapidly now to remain effective, that the emphasis is realistically shifting to *anticipating* problems, and trying to stay ahead of the game. And our ability to do that is dependent upon the same technologies that have made it necessary.

The almost real-time responsiveness that is demanded of everyone connected to this fast-paced and changeable environment is dependent upon quality information… Data. *Big* data. Although yet poorly defined, the concept of "big data" can be understood as information sets that are simply too big for human manipulation, but which themselves require artificial systems to gather, analyze, and interpret. Silvia Dusi's discussion (Chapter 2) of the nature, use, and challenges of big data is instructive. As artificial systems overwhelm us with data, so intelligent searching and analysis tools must evolve to make sense of it, and to render it useful to the jobseeker, and/or to the services that exist to help the jobseeker negotiate the shifting sands of the modern labor market. Perfecting systems to scrape, filter, and organize data effectively is undoubtedly the most urgent concern facing PES responses to labor market change.

In my contribution to this volume, I chose to outline the technical evolution of the Australian IT response to the challenges all PES face. The trajectory of the evolution in Australia since the 1970s matches the evolutionary process outlined by Jacqueline Mazza. The current Australian PES model is indeed highly adaptive, growing in modularity, and capable of responding to the changing environment as well as any

PES IT system. But Australia faces exactly the same pressure as the rest of the world, and like the rest of the world, although the challenges of IT evolution themselves are difficulties to be overcome, there is another bottleneck that can hold up adaptation in this domain, and that is approaches to policymaking.

Regina Konle-Seidl (Chapter 1) analyzes the German experience with Active Labor Market Policies and notes that to the extent that they benefit from highly localized and context-specific application, they enjoy some success, but otherwise, traditional approaches to policymaking tend to lag dangerously behind the social issues they seek to address. Dr. Sang Hyon Lee (Chapter 3) shows the relationship between real-world information and decision-making, underscoring the increasing need for public policy to be informed by intelligent and appropriate big data analysis.

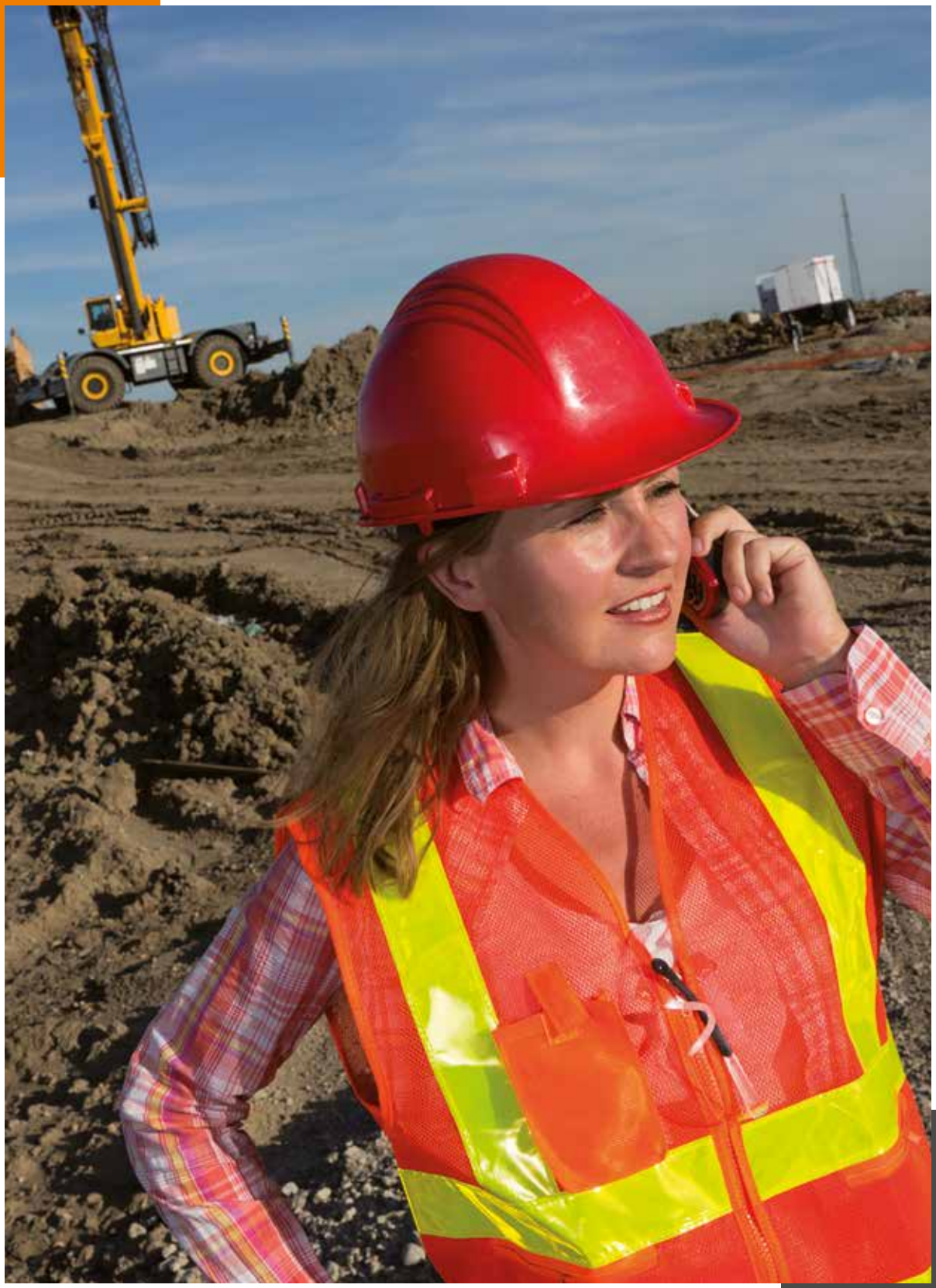
These challenges are hard. And they cannot be faced alone. Part of the socio-cultural shift that is occurring with the digital revolution is widespread de-centralization. This fact is echoed by many authors in this volume who point out the central importance of allied effort. Effective PES responses require partnerships between expert knowledge bases that do not necessarily have a history of cooperation. Pierre Georgin (Chapter 9) correctly identifies both the general challenge of labor market evolution, and its granular, locality-specific nature. Coordinated effort between big data-driven analytics and fine-grained local knowledge is another layer of the current challenges facing PES that will only exacerbate in future. The logistical difficulties implied by such partnerships are considerable, but the necessity is unavoidable.

The Australian experience, notably with the nation's Indigenous population, has in recent years underscored the necessity of policy – "with us, not for us" – granular approaches informed by local knowledge, with direct representation of those for whom the policy is being evolved. Getting this mix right is a juggling act. Too much focus on local solutions – in the absence of overarching national data-driven policy – risks producing an overly complex and opaque service landscape which can hinder the effective deployment of services. Too much emphasis on high-level policy risks disenfranchising those most in need.

The "4th industrial revolution" is a challenge to accepted employment models, and raises issues that will need to be addressed quickly, but it also offers the solutions. The key lies in effective data management. We need to better understand what is really happening in the labor market across all relevant demographic and geographic divisions. We need to be able to gather and analyze that data quickly and effectively, and we need the results to drive policy decisions and to inform tool and service design in a nimble, modular, and adaptable manner.

It has been a privilege to be centrally involved in the stewardship of the unique solution to the challenges of PES represented by the now two-decade-old, fully-contracted Australian model. We look forward to facing the challenges ahead, and welcome the opportunity to forge international partnerships to discuss these challenges and to explore what is working and what is not in different contexts.

Sally Sinclair
CEO, National Employment Services Association (NESA), Australia



Effectiveness and Efficiency of Active Labor Market Policies

1

by Regina Konle-Seidl

Introduction

Active labor market policies play an important role in the portfolio of economic policymakers in many European countries. ALMPs are a means of combating cyclical and structural unemployment and promoting employment. In the aftermath of the Great Recession there is renewed interest in the potential for active labor market policies to help ease a wide range of labor market problems, including youth unemployment and joblessness among displaced adults. In many countries, governments spend substantial amounts on ALMPs for unemployed workers with the aim of increasing their chances and speed of finding a job. The expenditures for ALMPs like job search assistance, training, wage subsidies, and public employment go above one percent of GDP in countries like Denmark and Sweden. They are usually higher for measures than for services, the UK being an exception (Figure 1).

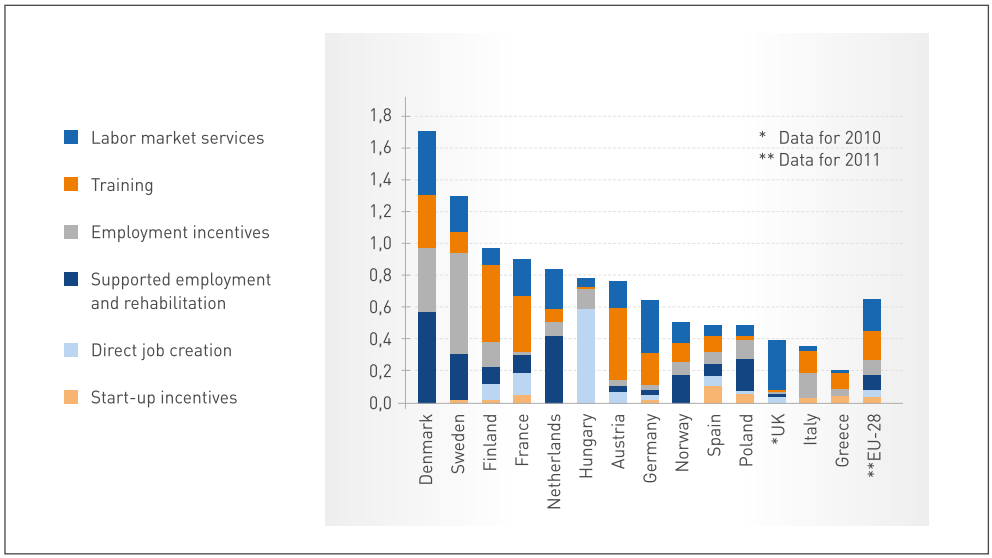


Figure 1: 2013 ALMP expenditure by type of program (in % of GDP) in selected EU countries

(Source: Eurostat LMP database)

ALMPs act selectively to favor particular groups in the labor market. Three main target groups are recognized: unemployed, employed at risk, and inactive. The primary target groups in most countries are people who are registered as unemployed by Public Employment Services or who are currently employed but at risk of involuntary job loss due to difficult economic circumstances. People currently considered inactive but interested in entering the labor market (e.g., women re-entering work after a family break) are also treated as an important ALMP target group.

In international classifications like the Eurostat Labor Market Policy database, ALMP interventions are divided into *services and measures*. 'Services' refers to labor market interventions, typically including job search courses, vocational guidance, counselling, and monitoring by public or contracted private employment services to assist the unemployed in their job search and job placement for the purpose of improving the match between jobseekers and firms. 'Measures' refers to activities that constitute a full-time or significant part-time activity of participants during a significant period with the aim to improve the vocational qualifications of participants, or to interventions that provide incentives to take up or to provide employment (including self-employment). Most measures are aimed at activating the unemployed, helping people move from

involuntary inactivity into employment, or maintaining the jobs of persons threatened by unemployment.

Evaluation of ALMP interventions

In European countries, a general catch-up development in terms of evaluation research can be observed in the last two decades. Credible and more robust evidence on the causal impacts of individual ALMPs has become available since the early 2000s. In contrast, in the US an evaluation culture has already been developing since the 1980s. The legal obligation to evaluate large-scale US public programs implies that outcomes are tracked, program impacts estimated and less effective programs are replaced with more effective ones. In Europe, considerable methodological progress has been made and data availability and quality has improved substantially, e.g., through integrated administrative datasets and/or combined administrative and survey data. Yet within a relatively short period, the number of impact evaluations has exploded in (some) European countries, offering the prospect of being able to learn from past studies what types of programs work best, in what circumstances, and for whom.

Apart from better data availability, the commitment and political will to evidence-based policymaking as well as introducing legal and program requirements for evaluations have been important in developing an evaluation culture in some, but not all, European countries. Outcome measurement and impact evaluation play an increasingly important role in designing labor market policy in Germany, Switzerland, Denmark, France, Sweden, the Netherlands, and the UK. Evidence-based ALMP-making is now a recognized claim in the political landscape of these countries. In recent years, large-scale randomized controlled-field experiments – considered to be the golden standard in ALMP evaluation – have been conducted in, e.g., France, Germany, and Denmark. Policymakers can increasingly rely on results from experimental studies. Hence, labor market policy in these countries is already a learning policy field with extremely high dynamics, designed in an intensive discourse between policy, practice, and science.

The quantitative measurement of outcomes and program impacts is a relatively technical activity, as compared to the historical tradition of PES activity and management

concerns. In most countries, the PES is responsible for the implementation of active labor market policies. Impact evaluation using internal and external methodological expertise can be a driving force in PES management and its results, often accounting directly for much of the substantive spending on ALMPs.

Impact evaluations should be distinguished from monitoring. Monitoring is an instrument to administer an ALMP program through regular and systematically conducted observation and documentation of statistical indicators over time. The main purpose of monitoring is to support the PES management responsible for ALMPs, to improve the implementation of a program, and to ensure its good performance. But monitoring is not able to explain why a particular result has occurred or failed to occur in a program. Although monitoring gives a first impression of a program's success or failure, it does not provide any explanations for it. Monitoring only informs about gross effects like the percentage of program participants who found a regular job after participation. However, the employment status after participation cannot be exclusively attributed to the program. Participants might have also found a regular job without it. To deal with the questions of cause and effect that are crucial to policy decisions, evaluations are required. Impact evaluation goes that extra step further. It aims to determine whether a program is successful or not by defining certain criteria and assessing whether these were met.

An ideal ALMP evaluation process involves three steps:

1. Analyzing, based on clearly defined success criteria, whether participation in a measure is causal for improving the situation of the participating individuals
2. Examining whether the measure has also achieved net positive effects on the aggregate level (employment and unemployment rates)
3. Finally, determining whether the individual success justifies the cost of the measure (efficiency)

Microeconomic evidence provides information on what works

The standard empirical evaluations of labor market policy consider the direct effects ("treatment effects") of single programs on their participants in terms of outcome variables like unemployment duration, re-employment rate, or earnings after

unemployment. They try to answer the key counterfactual question: "What would have happened to a program participant if he or she had not participated in the program?" The methods used to evaluate individual ALMPs are very sophisticated, ranging from experimental studies using random assignment to a variety of quasi-experimental methods using, e.g., difference-in-difference analysis or propensity score matching to construct adequate comparison groups by so-called "statistical twins". Quasi-experimental strategies rely on a non-randomly chosen group of non-participants as control group. Avoiding the problem of selectivity of unobserved characteristics (e.g., participants are more highly motivated than non-participants) is the big advantage of experimental studies, because random assignment enables direct comparison between actual participants and actual non-participants. Additionally, non-econometric qualitative methods are used to analyze the implementation process. They are also used when qualitative targets (e.g., social inclusion) are set, or when existing data sets do not allow for the application of econometric methods.

Like in any evaluation, the fundamental problem is to find a suitable comparison group to determine the actual (net) effect of the measure. Statistical twins are similar in terms of important observable characteristics (e.g., age, sex, unemployment and employment history, type of benefit received). Therefore, it is possible to estimate, based on their later employment status, how the chances of the ALMP participants would have developed without support. The individual causal effect for participants results, then, from the difference between its observed participation results and the estimated counterfactual non-participation results.

So do ALMP interventions deliver? Available evidence shows that what works depends very much on the type of program, but also on the time horizon (short-term vs. long-term effects) and the type of measured outcome (e.g., short-term re-employment vs. long-term job stability effects) and on jobseekers' profiles (job-ready unemployed vs. disadvantaged unemployed). Recent meta-studies provide some general insights on the effectiveness of ALMPs. The meta-analysis by Card et al. (2015) includes impact estimates from over 200 econometric evaluations from around the world. The result shows that on average, ALMPs have relatively small effects. The average short-run impacts on employment are close to zero but become more positive two to three years

after completion of the program. Among a rough classification of programs, activating 'work first'-style job search assistance and sanction/threat programs tend to have larger short-term effects. Human capital-style training programs and private sector employment subsidies have small short-term impacts but larger gains in the medium or longer run. Public sector employment programs have negligible or even negative program impacts at all time horizons. The authors also find systematic heterogeneity across participant groups, with larger impacts for females and participants who enter from long-term unemployment but lower impacts for disadvantaged and young people.

The main findings apply roughly for all country groups (Germanic, Nordic, Anglo-Saxon, non-OECD countries, Latin American and Caribbean countries) considered in the meta-analysis. OECD country studies show, furthermore, that applying ALMPs in an activating framework, characterized by making benefit receipt conditional upon job search activities and/or program participation, works best for unemployment insurance (UI) recipients who are relatively job-ready, but is less effective for benefit recipients facing health restrictions and other employment barriers (Martin, 2014).

Even though meta-studies provide some important conclusions, a country-specific survey on evaluation studies is an important addition to the literature. It allows making statements for a specific institutional and socio-economic background. In particular, it helps to determine whether changes in ALMPs and the related institutional framework are important candidates for explaining changes in the effectiveness of programs. The meta-analysis by Card et al. (2015) shows, for example, that job creation programs have negligible or even negative program impacts. However, studies of Germany before and after the Hartz reforms show different results for programs that create subsidized jobs for the more disadvantaged unemployed. After the reforms, new schemes were introduced that more strongly targeted people with severe placement impediments. Before the reforms, detrimental average treatment effects on the regular employment rate of job creation participants dominated the available results. After the reforms, positive effects are found for a number of different schemes, indicating that careful targeting and implementation is essential if employment programs are to improve, not worsen, labor market prospects of participants (Wolff and Stephan, 2013).

Another important lesson learned from German evaluation studies of subsidized employment was that job creation schemes might be particularly harmful for young unemployed persons. Therefore, the requirement to quickly place young UB II recipients into new work opportunity schemes (so-called One-Euro-Jobs) if they could not be immediately placed into regular jobs or training was abolished in April 2012 (Wolff and Stephan, 2013).

The operational use of evaluation results

Most evaluation studies provide results on the aggregate level. PES and other agencies implementing ALMP measures and services might, however, be interested to have information on the effectiveness of available labor market programs at a local agency level, differentiated with respect to the feature of the measure as well as of the supported persons. The operational use of evaluation results integrated in the IT landscape of employment services is, however, rare. A comprehensive system for operational purposes was developed in the German PES (BA) between 2005 and 2007. The internal evaluation tool TrEffeR ("Treatment Effects and Prediction") continuously examines how participation in the measures administered by the BA impacts on the chances of finding work. Via the data warehouse, TrEffeR provides information systematically and twice yearly on the effectiveness of all available labor market programs, which are reported at a local agency level, differentiated with respect to gender, year and month of program start, and duration of the labor market program.

This timely information can provide useful insights on the effective implementation of the measures and be used for further action planning. The TrEffeR database contains the "biographical data" of the BA, which comprises individualized customer information on unemployment, participation in measures, benefit receipt, and employment. Like in every quasi-experimental evaluation study, the analysis is based on a control group ("statistical twins"). Comparing the later employment status of participants (treatment group) and non-participants (control group) makes it possible to estimate how labor market opportunities would have developed without participation. The micro dataset built for TrEffeR can also be used to gain an overall impression of the effect of labor market policy instruments. Figure 2 shows the impact of different instruments for the first year after start of the program at the national level.

Program	Duration of program	Net effects in % points
1 year after program start 2011 (2012)		
Retraining (specific professional skills provision)	Up to 3 months 3 to 6 months	16 (16) 10 (9)
Short training measures and placement services (private providers)	Up to 3 months 3 to 6 months	5 (4) -3 (-1)
Firm internal training and placement services	Up to 6 weeks	17 (18)
Hiring subsidies	Up to 3 months 3 to 6 months	29 (32) 33 (40)

Figure 2: Estimated net effects of different German ALMP programs *(Source: Büttner et al. (2015).)*

Macroeconomic evidence of the impact of ALMPs on employment and unemployment rates

A more complete assessment of ALMP effectiveness (and efficiency) requires an investigation of general equilibrium effects. Active labor market policy not only affects the labor market success of participants. ALMPs might also affect the job perspectives of non-participants due to indirect or unintended effects such as substitution, displacement, and deadweight. Deadweight loss occurs when subsidized workers are hired who would have been recruited even without the subsidy. Displacement effects occur when subsidies targeted at the long-term unemployed lead employers to hire them instead of other unemployed persons. Substitution effects prevail if some of those taking up subsidized jobs will merely replace other workers within the same firm. Hence, even if ALMP programs have a positive effect for the participants, this does not mean that these programs improve the labor market situation as a whole.

Compared to the large body of micro-econometric evaluation studies, the number of aggregate impact studies taking indirect effects of ALMPs into account is rather small. In the case of aggregate impact analysis, the counterfactual question is: "What would have happened to a macroeconomic outcome variable (aggregate employment or unemployment) if the intensity and mix of ALMPs had been different?" The results

from non-experimental studies that follow a regional matching approach are rather mixed. There are only few experimental studies testing for indirect effects. One of the larger programs based on an experimental design is a job placement assistance program for young college-educated jobseekers in France evaluated by Crépon et al. (2013). The evaluation results show that the labor market outcomes of the non-treated differ depending on the program intensity in a region. This provides evidence of displacement effects. In the end, the program seems to have had very little net benefits, although unemployed youths who were assigned to the program were significantly more likely to have found a stable job than those who were not.

From a policy perspective, however, indirect or equilibrium effects may not be considered that important if the intention of targeted subsidy or other schemes is to "shuffle the queue" of jobseekers.

Efficiency of ALMPs

Policymakers who must decide on implementing, extending, changing, or abolishing specific ALMP programs normally try to translate the gains of a program into monetary terms or to carry out a cost-benefit analysis (CBA). A CBA is the most comprehensive design of putting value on impacts and value those against the cost of obtaining them. In the past, however, evaluation studies were accompanied very rarely by rigorous cost-benefit analyses. Yet reduced public spending in recent years requires PES and other ALMP implementation agencies to "do more for less", i.e., to deliver ALMPs with increased levels of cost-effectiveness (efficiency).

The costs and benefits of ALMPs are measured as the changes from what would have occurred if the person had not been enrolled in the program. The benefits include, e.g., the impacts on the earnings of ALMP participants. The largest share of the cost of unemployment is usually induced by the potential loss of revenue and not by the public intervention (direct program costs). An ALMP's cost-benefit analysis should therefore include, at least, the gains for the target group and the impacts on public revenues and expenditures. The net benefit of a program consists of the algebraic sum of all the program's benefits and costs. These benefits are assessed from the point of view of the participant, that of non-participants, and that of society as a whole (i.e.,

participants and non-participants). However, impacts like reduced criminal activity or psychological benefits of increased employment as well as indirect effects on non-participants (i.e., displacement effects) are usually difficult to quantify.

The following example provides a CBA of a large-scale pilot project hiring additional caseworkers. The pilot was implemented to answer the question whether lower caseloads improve the effectiveness and efficiency of ALMPs. Additional caseworkers were hired in 14 of 779 local employment offices in Germany. The evaluation of the pilot by Hainmüller et al. (2016) shows a sizable decrease in the unemployment rate and the cumulated unemployment duration, and an increase in the reemployment rate for the twelve-month period after the start of the pilot. Moreover, the pilot had no negative regional spill-overs (displacement effects) on the outcomes for neighboring offices. To assess the cost-effectiveness of the measure, UI (unemployment insurance) expenditures between pilot and control offices were compared. To calculate the absolute costs, the evaluators added the additional salary costs of the newly hired caseworkers to the UI benefit expenditures, while in the control offices only the UI benefit expenditures were used. The net effect was estimated by regressing the monthly costs on the treatment indicator and a variety of control variables. The authors found that the costs in the pilot offices were higher than in the control offices, as expected, but only for the first eight months. From the ninth month onwards, the effect turned negative, which means that the initial cost increase from the additional caseworkers is offset by the savings gained from increased effectiveness. These results suggest that more resources for labor market *services* can pay off. Increasing the number of caseworkers can be cost-efficient in the long run, implying an average cost reduction of around 5 percent over the baseline of 2.99 million euro of average costs of UI benefit expenditures in the pilot offices in the pre-pilot year. The cost-benefit calculation would have been even more beneficial if the likely increase in UI contribution payments associated with a higher reintegration rate of jobseekers into regular employment had been taken into account.

Conclusion

Over the past three decades, European countries have invested large amounts of public funds in labor market programs for unemployed people. These programs, collectively known as ALMPs, aim to bring jobless people back into employment through a broad

range of interventions such as training courses, wage subsidies, and employment programs in the public or non-profit sector. Evaluation studies have added a lot of new insights into what works and what does not work to facilitate the transition from unemployment to (unsubsidized) work.

The overall evidence points to the conclusion that ALMPs are an important element of labor market policies but the results suggest that ALMPs can only contribute moderately to the reduction of structural unemployment. Numerous individual assessment studies suggest that in general two sorts of interventions are rather effective: counselling and job assistance programs and training, and private sector employment subsidies programs indicating larger gains in the medium or longer run. It has also become evident that ALMPs need to be selective, as individual targeting is a key success factor. As similar programs operating under particular institutional framework conditions develop different effects, implementation conditions and practices are important. This applies not only to financial and personnel resources but also to the managerial capacity of the agencies (local/regional PES) delivering services as well as the flexible and individual use of instruments by caseworkers.

One big gap in evaluation research is the perception employers have of these policies. Little is known about how employers consider participation in ALMPs when assessing an applicant. Yet their perspective is essential, as it is ultimately employers who decide who gets a job and who does not.

Dr. Regina Konle-Seidl was awarded a Master in Economics by the University of Erlangen-Nuremberg in 1983 and afterwards employed at the university from 1984 until 1987. She undertook postgraduate studies in International Economics at the Universidad de la República Montevideo, Uruguay, from 1997 to 1999. From 1990 to 1994, she worked at the German Institute for Employment Research, where she has been employed as a Senior Research Fellow since 2000. Her research focuses on international comparison of labor market institutions and reforms, activating labor market policies, and governance of employment services.

Web Job Vacancies as a Resource for Better Labor Market Knowledge

2

by Silvia Dusi

Introduction

"Every day, 2.5 quintillion bytes of data are created. This data comes from digital pictures, videos, posts to social media sites, intelligent sensors, purchase transaction records, cell phone GPS signals to name a few." (Zicari 2014). The term "Big Data" usually refers to large amounts of different types of data produced with high velocity from a high number of various types of sources.

Over the last years, social media (the main Web 2.0 websites and services), and in particular the social networks, have been gaining more and more importance in Italy: over 60% of Italians who use the Internet have a Facebook profile (23 million out of 38), and 3.5 million have a LinkedIn account; compared to 2012, the number of LinkedIn profiles increased more than 18%. The number of Italian companies that use social media for professional reasons, such as a Facebook page or an account on LinkedIn or Twitter, also increased. According to a recent survey, almost 40% of Italian companies are already present on a social network, with a further 32% considering it (Osservatorio Business Intelligence, 2012).

In this context, social media are more and more becoming a vehicle for innovative and effective services for citizens, businesses, and governments; among these online services, an increasingly important role is played by those focusing on employment. Social recruiting (e.g., via the Jobvite website) is a new form of matching the supply and the demand of labor on the Web. It is made possible mainly by the growing opportunities social media offer for building relationships and facilitating communication flows. The Web 2.0 has definitely changed the way we seek new job opportunities, increased the collaboration between subjects, and expanded the channels of information dissemination. Moreover, the Web today can provide an important contribution to the labor market domain, as the huge amount of data available online constitutes a useful resource containing information on the trends and dynamics of the labor market under several points of view, such as geographical area, occupations, and skills.

We can say that the Web is becoming more and more popular to express both the Labor Demand and Supply because it allows:

- Better intermediation services between people and companies
- Decreasing the mismatch
- Production of information on actual trends to improve the stakeholders' policies

Clearly, there is a need to follow an appropriate methodology for processing the information derived from a large amount of unstructured text, such as Web Job vacancies that companies publish through specialized websites (Dalal and Zaveri 2013, Feldman and Sanger 2007, McCallum 2005).

The term "Big" does not refer only to the quantity of data, but also to the heterogeneity of data sources and to the velocity in analyzing data. In the literature, the 3Vs model describes the fundamental dimensions of Big Data as:

1. Volume: refers to the massive size of data generated by machines, networks, and human interaction within systems (e.g., social media);
2. Velocity: refers to the pace at which data are generated (e.g., real-time) leaving the delay of analysis very short;
3. Variety: data structure and contents, e.g., semi-structured or unstructured data with video, photo, web links.

The main challenge in the labor market: toward new opportunities

Labor markets were always studied on the basis of statistical data – with indicators describing the employment phenomena – and administrative data, providing information on the trends and dynamics of the market.

The main issue for policymakers who deal with labor markets is the matching between demand and supply of labor. While the labor **supply** is sufficiently described, and we have data of the different nature of unemployment, profiles, and skills of jobseekers, we do not have enough data on the labor **demand**, i.e., what companies look for, both the number of vacancies the skill requirements.

Knowledge of the labor demand is crucial, especially for the following characteristics of data:

- Timeliness
- Territorial granularity
- Links between occupations and related skills

Until now, surveys were the main source of information on labor demand. However, relying on surveys had some drawbacks:

- They are expensive to carry out;
- They are difficult to carry out, therefore they cannot have a high frequency, and often do not offer information on the local dimension or suffer from problems of under-sampling;
- The final data that results could be already obsolete due to the time-lag between the start of the distribution and the end of the analysis;
- It has a top-down approach, i.e., soft skills and professional expertise are usually pre-defined.

From the stakeholders' perspective, there is a need for environmental knowledge, i.e., data to describe the framework and to supply context information. The stakeholders need to realize that data-driven systems are able to provide more precise and timely information and to support the decision-making process in an effective way. ARLI, a project carried out for the European Commission[2], underlined the information needs of the regional and local stakeholders who were interviewed during the project: information on the current and future developments in the labor market is needed for analysis on regional, local, and district levels and/or for analyzing specific sectors and professional groups. The requested data especially concern the labor demand, and the effective matching between demand and supply (both quantitative and qualitative).

There is another place where the demand for labor is expressed; the Web is becoming an increasingly important channel for posting jobs and, in general, for the matching between demand and supply of labor. There is a multitude of portals (a.k.a. **Job Boards**) that publish Job Vacancies.

We can identify three main advantages that Web Job Vacancies provide with respect to survey-based analyses:

- **Data Scraping:** the cost of collecting data (*aka* data gathering or scraping) is lower (specifically, moderate initial costs, but low marginal costs).
- **Time to market:** data are always up-to-date regarding the observed phenomenon, and this enables the use of real-time analysis techniques.
- **Bottom-up approach:** the classification is richer as it emerges from the data rather than from a pre-defined model or taxonomy. This peculiarity is particularly useful for identifying soft and professional skills, especially if we consider that the skill mismatch has a lot to do with the difficulty of defining and classifying skills properly. Unlike traditional surveys, the skills expressed online do not have to fit pre-defined classifications, like in a questionnaire, but they are expressed freely (i.e., they are not strategic responses to sensitive questions).

2 Achieving Regional and Local Impact (ARLI) funded from the European Union's Progress Programme, 2013-2014 (www.regionallabourmarketmonitoring.net/arli_public.htm).

It is worth noting that Web data sources have an unexpressed informative power that allows one to gather a lot of information about both labor demand and supply. Consequently, this process involves several challenging tasks that we will briefly discuss in this paper, such as data selection, data transformation and cleaning, data reasoning and mining, as well as data visualization.

An interesting aspect to monitor is the introduction of a new paradigm: from "pre-defined answers" (precise data, structured, collected ad-hoc, and small) to "let the data speak" – the "data-driven economy or technology" (huge amount of unstructured data, presence of inaccuracy and analysis scalability). To let the data speak means to encourage an approach to the analysis of the phenomena based on the questions that arise from the observation of correlations between objects or "hidden" facts, hard to know *a priori* and without the "data-driven" observation of the reality of interest. Of course, another huge difference – not negligible – in this kind of Big Data approach is the real-time collection of all (or almost all) data.

The representativeness of web data

A key challenge in using online job vacancies is ascertaining whether the set of online job vacancies is a representative sample of all job vacancies in a specified economy. Even if it should be considered finite, the population of job vacancies at any given moment in time is not easily counted nor is its structure easy to determine. Moreover, job vacancies are voluntary, jobs and people are reallocated in the labor market and in firms, tasks are split, restructured, or partially switched and recruitment strategies might have sectoral and occupational specificities (Mang 2012; De Pedraza et al. 2007; Gosling et al. 2004).

Statistically speaking all these elements would suggest to consider online vacancy data as containing missing not at random (NMAR) observations (Little and Rubin 1987); thus, available samples are prone to problems of self-selection and/or non-response. Various approaches have been taken by different authors in attempting to deal with representativeness issues in the setting of online job vacancy. Some researchers have used information from the supply side of the market and assessed the coverage of online vacancies based on the sectoral and occupational structure of LFS data (Štefánik

2012; Jackson 2007; Steinmetz et al. 2009). Others focused on segments of the labor market characterized by widespread access to the Internet (e.g., ICT) where coverage bias is likely to be a minor problem (Kennan et al. 2006; Wade and Parent 2001).

Kureková et al. (2016) consider online data generalizable due to the dominant market share and very high reputation of the chosen portal among employers and employees. Others suggest that, depending on the particular research focus, online job vacancies could be coupled with other sources of vacancy data or text describing analyzed professions. Wade and Parent (2001) acknowledge that coverage bias can be addressed by complementing their methodology with structured interviews with employers or recruiters, whereas Kureková et al. (2016) suggest using information from the EURES website because of its standardized platform and relatively wide usage across European countries. Overall weighting as an adjustment technique (Steinmetz et al., 2009; De Pedraza et al. 2007; Eurostat 2010) can be implemented in improving the representativeness of online job vacancy data.

More specifically, statistical methods anchored in the literature on missing data and self-selection within a model-based (Valliant et al. 2000) approach (such as Post-stratification weighting, Propensity score adjustment and Endogenous/Heckman selection models) to the correction of data not missing at random, could be used to adjust biases stemming from the structure of online vacancy data. It is important to note that online data can be usefully employed in official statistics even if they are not entirely representative. In fact, their evolution over time can mimic quite closely that of the entire population, and be used to construct a dynamic index.

The two major examples in this respect are from the US. The Billion Price Project at MIT monitors billions of online prices around the world. In the US, although online prices are not representative of the basket of goods used in the CPI, their change over time predicts CPI inflation extremely well. For this reason, the Bureau of Labor Statistics is collaborating with MIT to introduce online data checking in inflation computations. Another relevant example is from the labor market. Vacancy data are crucial indicators for labor market slack. In the US two main data sources are used in official statistics and for policymaking: the Job Openings and Labor Turnover Survey

(JOLTS), administered by the Bureau of Labor Statistics, and the Conference Board Help Wanted Online series (HWOL) which monitors online vacancies (Barnichon 2010). Although not comparable in terms of representativeness (the first is designed to be representative, the second is not) both series have a remarkably close evolution over time and are jointly used in policymaking. However, the debate on the complete reliability of online vacancies is still very hot: for example, one of the reasons why the FED postponed the interest rate increase in June 2016 was the weak conditions in the labor market described by the HWOL series whereas Cajner and Ratner (2016) show that there was a bias in online data which led to spurious results.

How to deal with web job vacancies

As the job vacancies posted on the Web are expressed through semi-structured or unstructured texts, they require rigorous work from a scientific, methodological, and technical point of view if we want to extract knowledge (and, subsequently, value-added) from these data (Mezzanzanica 2013). A process that describes all the steps required for dealing with Web Job Vacancies is the Knowledge Discovery in Databases (KDD), defined by Fayyad et al. (1996) as the "Process for Extracting Useful Knowledge from Volumes of Data". They explicate: "*The value of storing volumes of data depends on our ability to extract useful reports, spot interesting events and trends, support decisions and policy based on statistical analysis and inference, and exploit the data to achieve business, operational, or scientific goals.*" *This process clearly relies on "[...] our ability to extract useful reports, events and trends, support decisions and policy based on statistical analysis and inference.*" (Fayyad et al. 1996).

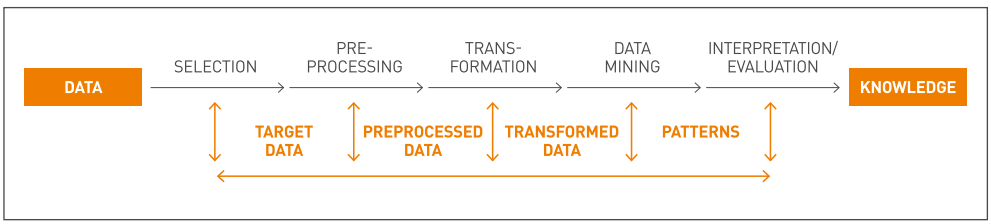


Figure 3: The KDD process *(Source: Fayyad et al. (1996).)*

Figure 3 summarizes the process of data extraction and its different components, underlining the complexity of data quality, data significance, selection of sources for creating a digital observatory, and, consequently, the issues of web scraping and setting up a data model for classifying the information. We can summarize these steps as follows:

1. **Data Selection:** Data are scraped from a pre-defined list of Web sources. That requires dealing with data significance and source reliability issues. Furthermore, a multi-criteria decision-making approach should be used for identifying and ranking data sources on the basis of their main characteristics.
2. **Data transformation and cleaning:** This is a mandatory task due to the heterogeneity of the data, characterized by different (unknown) data models with poor data quality. Indeed, data quality is usually defined as "fitness for use" and includes many dimensions (e.g., consistency, completeness, soundness) at both data and structure level. We addressed and developed a methodology for assessing and cleaning structured data in a formal and automatic way (Mezzanzanica et al. 2015, Boselli et al. 2014). However, this task becomes challenging in the case of semi-structured/unstructured data, mainly due to the lack of a rigorous data model, which prevents the use of the well-known ETL techniques.
3. **Data reasoning and mining**: This task aims to extract the value from the data in answering a specific business or research question (see Amato et al. 2015 for details).
4. **Data visualization**: This generally refers to the representation of data/knowledge or the data evolution over time (a.k.a. dynamics) by means of infographics, having in mind the stakeholder peculiarities and abilities to reading the data. Nowadays, the definition and use of narrative paradigms that support different users in understating the data has become a challenge.

Conclusion

Web data have received much attention from both industrial and academic communities. This results from their informative power enabling the description of complex phenomena that evolve dynamically and continuously over time, as in the case of web job vacancies. These data are frequently heterogeneous and involve a mixture of semi-structured and unstructured data with different sizes and degrees

of granularity. All these data characteristics play a crucial role in any "Big Data" application.

Indeed, a real-time analysis of web job vacancies collected by heterogeneous and unstructured data sources makes it possible to obtain fine-grained and up-to-date information about labor demand trends, identifying the skills requested by the market, and supporting the decision-making activities and strategies of labor market operators. As one might imagine, this process is far from straightforward as it involves statisticians, economists, and computer scientists working in close cooperation with application domain experts, each focusing on their own perspective.

Our research progress in this direction, together with our expertise in the labor market domain, suggests that the use of web job vacancies can give a competitive advantage to labor market observatories in understanding, monitoring, and explaining labor market phenomena, thus supporting the decision-making activities of labor market operators in a more effective and timely way.

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Public Employment Services and Big Data

3

by Sang Hyon Lee

It is important to develop evidence-based policies using data. Data is widely applied and collected by governments to verify and analyze the effect and performance of policies. A conventional way of using data is by first collecting it through a survey. The survey methods, however, are becoming costly and complicated. They can cause measurement errors and non-sampling errors due to lying or inaccurate answering. The use of IT and data has been developed for government services and policy decision-making to offer an alternative method to surveys. Large volumes of government data may become a foundation for new solutions or for giving us insights on government activities and polices that were previously not feasible.

Labor market actors and Public Employment Services always have wanted to find solutions for the mismatch on the labor markets. Policymakers also strive to provide job matching information for citizens. Today, clients demand a high level of e-service from the PES. E-employment service is efficient, effective, and makes labor markets more transparent. Data-based and data-driven e-employment services will improve PES in the future. Big data may provide us with a new tool to solve many issues, such as how to correctly job match, how to give a proper overview of regional labor market demand and supply, and how to see the actual effect of education on the labor market.

Big data is a term for massive digital datasets collected from various sources, extremely large, complex, raw, or unstructured. Big data cannot be analyzed through conventional relational database techniques such as Data Base Management System (DBMS). It is a new way of data management in addition to data warehousing and mining in the 2000s. Big data was first introduced in the 2010s and is being widely used in several sectors, including transportation, health, online shopping, banks, and insurance.

Big data is used for two approaches in PES. One is to find new angles for labor market analysis and the other is to apply it to the job matching websites. For the first purpose, the Master Data Base technique is used for linking databases of multiple institutions. Several PES are creating systems for big data collection and linked and merged data bases.

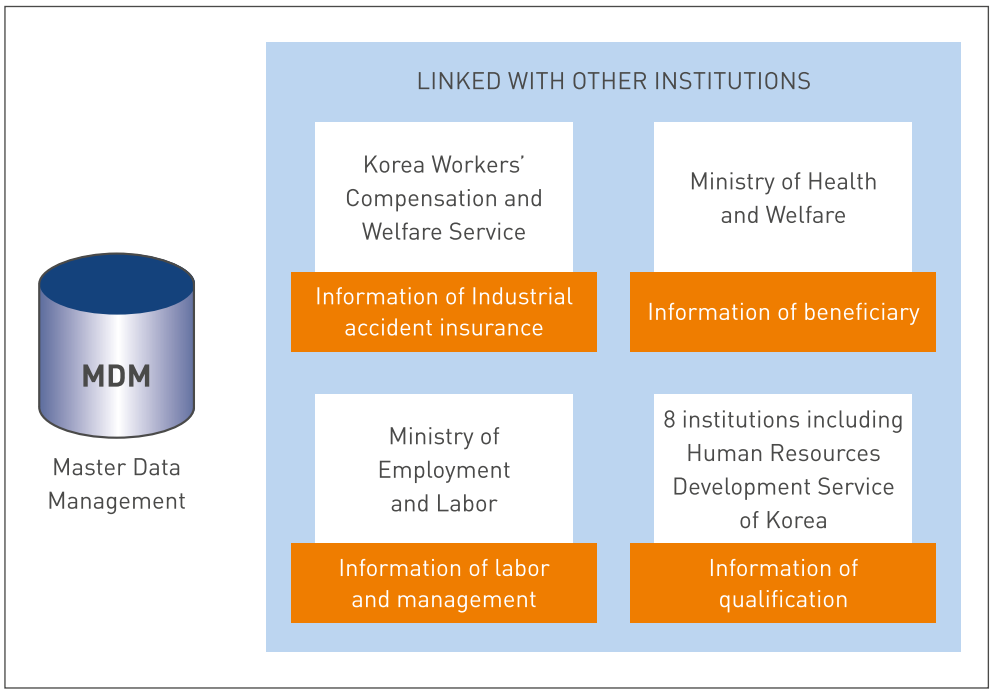

Figure 4: MDM system of Korea

The Korea Employment Information Service (KEIS) utilizes multiple databases together operating with MDM techniques. The data includes data on unemployment insurance, job matching, and training from the Ministry of Employment and Labor,

welfare recipients from the Ministry of Health and Welfare, compensation for industrial accidents insurance from Korea Workers' Compensation and Welfare Service, labor, and overdue wage. The data also checks skills and qualification data from the Human Resources Development Service of Korea, and the Korea Chamber of Commerce.

The Institut für Arbeitsmarkt und Berufsforschung (IAB) under the German PES developed Integrated Employment Biographies (IEB), which keep histories of unemployment benefit recipients, participants-in-measures, and jobseekers. The Research Data Center provides the following: 1) Sample of Integrated Labor Market Biographies, 2) Establishment Personal History of Employment, 3) Linked Employer-Employee Data, 4) Combined Working and Learning Data.

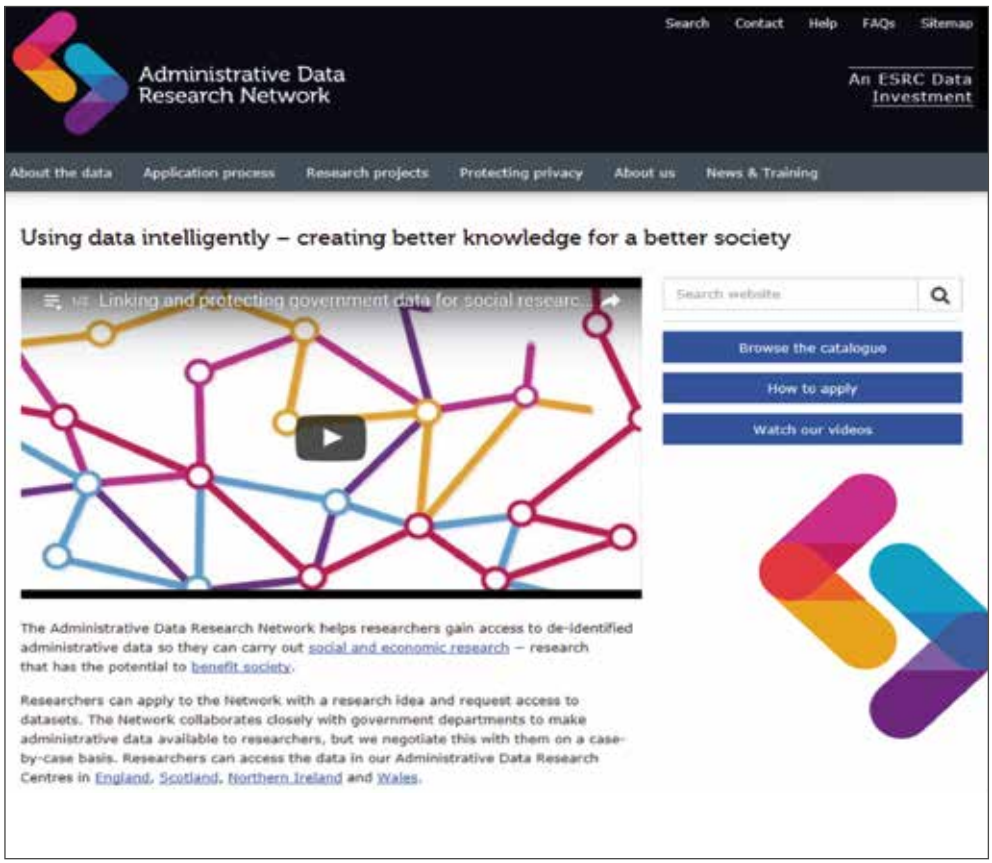

Figure 5: Administrative Data Research Network *(Source: https://adrn.ac.uk/)*

The UK manages administrative data at the Administrative Data Research Network[3]. The ADRN has established partnerships between UK universities, the government, national statistical authorities, funders, and research centers. The ADRN provides data for 1) business and third sector, 2) crime and justice, 3) economy and employment, 4) education and learning, 5) health and wellbeing, 6) population, 7) housing and environment.

One project brought together 40 million pieces of information on 3.6 million offenders. It was big data jointly collected from the Ministry of Justice, the Department for Work and Pensions, and HM Revenue and Customs. The research result would provide the government a better understanding of the links between employment, benefits, and committing an offense. Eventually, ex-offenders could be helped to go back to work and live better lives and be prevented from becoming offenders again.

The Upjohn Research Institute in the USA recently researched millions of job advertisement data using big data and text mining methods to read recent trends in job openings. They received the big data from Burning Glass, a company that uses job market analytics to make data-driven decisions. The Upjohn Research Institute found out that the level of skills and education required went up during the economic crisis. IZA, a labor market policy research institute in Germany, conducted a similar analysis using data on job openings online.

Developing new services such as automatic job matching using artificial intelligence, deep learning, and big data is another area that many PES try to develop for better job matching services. For example, Korea developed the Job Navigator using big data analysis on millions of clients who successfully found jobs. Through the Job Navigator system, clients can receive tailored services that are recommended based on a big data analysis using integrated information, including types of jobseekers and characteristics of users, service using patterns, and education, training and job search histories. Clients receive a variety of individualized employment-related information automatically, including vocational training information, information on jobs, and

3 ADRN; https://adrn.ac.uk/

government employment programs. This is based on the results of an analysis of the circumstances and stage in life of each individual user registered on the job portal WorkNet.

This is a smart matching service using big data. In the future, we may understand better how job placement mechanisms work. If we look deep into the big data, we may find company-specific skill sets and predict chances for employment using text-mining methods. Big data is already here. We need to be strategic with a long-term plan to build big data analysis systems and find methods to collect big data. Let us not just focus on gathering the data. Rather, we need to develop meaningful solutions for smart data management.

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The Evolving Role of IT in Labor Market Management

4

The imbalance between supply and demand in the labor market is a worldwide issue. But there are big differences between the strategies governments and Public Employment Services use to manage this imbalance. Some countries have only just begun to organize labor supply and demand, while others have sizeable organizations and advanced IT systems to support them in this challenge.

In this chapter, we will address the following aspects of this issue:

- Differences in Strategic Intent
- Trends concerning PES
- Technological Advancements in Search
- Requirements of a PES IT Solution to Support Any Strategy
- Implementation Models

Differences in Strategic Intent

Governments have various strategic purposes for organizing the supply and demand of labor. These are related to the economic, cultural, and political situation and the current state of the labor market in the region. Each combination has its own challenges and its own specific requirements. First, we will identify several strategic

goals in labor market management. Second, we'll discuss the level of sophistication needed to support each level of strategic intent.

A universal strategic goal is to decrease the amount of money spent on unemployment benefits. Short-term success can be achieved by matching people with the first job available. But this may lead to repeated unemployment – the first job within reach is not necessarily the most sustainable. Finding a jobseeker sustainable employment should not be based simply on the last job they held. That job might not be available or, as happens more and more often, it may be phasing out of the market ('sunsetting jobs'). Instead, caseworkers could advise jobseekers to look for interesting alternatives based on their skills, flexibility, ambitions, other interests, and even character traits. The advice might include getting training or coaching to widen the scope of alternative jobs. This approach not only leads to a more sustainable job, thus reducing the risk of repeated unemployment, but it also increases the value of the total labor force.

Another key purpose of strategy is managing the labor force: anticipating labor force developments and fluctuations in the demand for certain jobs. It is important to note that these insights can be gained at different levels of aggregation – not just at country level, but also at the regional and local levels. Consider, also, that labor market issues don't stop at the border. For example, management of foreign workers and labor migration should be part of the overall strategy. Of course, all this information must be readily available, not after years of analysis. Governments rely on relevant and timely insights to decide which long-term policies to implement. To increase the effect of these overall policies, a PES can tailor specific programs to small target groups in selected regions. These programs often include training, but also other kinds of support.

Perhaps the most interesting strategic goal is maximizing the potential of the total labor force. Everybody who works, or who could work, can be challenged to achieve their full potential during their working life. This is achieved by pro-active workforce development based on the country's culture and political situation. Various actions and agents are needed for successful workforce development. PES could facilitate assessment of individuals. People could get advice on adapting their personal development to prepare for changes in the market demand for their current skillset.

Governments could even allocate funds to ensuring that every individual's skills are constantly upgraded and adjusted to the demand in the market and most importantly on track with the individual's personal objectives/ambitions. Such measures keep the employed alert to changes and opportunities in the market and allow more people to maximize their potential, which benefits both them and the organizations they work for. Workforce development allows governments to plan for new industries to develop, anticipate on new occupations and emerging essential skills, and ensure the timely availability of trained workers. This decreases spending, because the system anticipates market imbalances rather than coming into action when it is already too late. (EmploymentAbility, a concept introduced in a recent whitepaper by Chris Brailey and Chris Gibbon, available through WCC's marketing department, covers this paradigm change in more depth).

Clearly these strategic goals, from finding a person a job quickly to maximizing the potential of the workforce, require very different strategies, processes, performance indicators, and even people.

Trends concerning PES

We observe and briefly address three important trends in PES.

The first is the ever-increasing pressure on budgets. More work has to be done by fewer people. That means working more efficiently. But another way to reduce work is being more *effective*. Technology boosts efficiency, but only more advanced software solutions can increase effectiveness. For example, by finding jobseekers sustainable jobs and lowering their chances of job loss and re-entry into the PES system. Better matching also gets people to work who were unable to find a job before. Effectivity is also gained by using systems that can dynamically manage execution of programs and influence the process as well as the results. Budget pressure is at the root of the current move from custom-made to COTS software. This move reduces initial costs and decreases the total cost of ownership.

The second trend is the constantly increasing expectations of users. They want smarter systems that communicate in a human way and offer services when they

want, where they want, and on the device they want – preferably adapted to their personal situation. To make this possible, PES look for IT solutions that accommodate variation between different groups and occupations. They also look for systems that grow smarter by capturing language, world knowledge, occupation knowledge, and local knowledge in taxonomies and ontologies.

The third trend is big data – the ever-growing volumes of structured and unstructured data available. This in turn sparked a demand for high-quality information: big data is of no use without a way to filter only the relevant data from all possible sources. Because the relevancy of data is determined by context, reliable knowledge bases have become crucial.

Technological Advancements in Search

The technology for finding a person a job quickly has been available for years. Type in a keyword and some kind of answer will appear. But what is this answer based on? Even more important, is it relevant? Is it useful? Does it consider the labor market and specific labor market programs? Does it use knowledge about target groups, occupations, jobs, candidates, location, and so on?

Keyword search is a simple way of searching that can work when people know what they are looking for and what the options are. But these are not the people who come to a PES for support. The people who do usually have far more complex circumstances. They need the high-level support of a smart, experienced, and well-informed case worker. To provide that support efficiently and effectively, caseworkers need more advanced search technologies, such as contextual and cognitive search. The Forrester Research model for enterprise search outlines the evolution in search technology across four maturity levels:

1. Keyword search
2. Semantic search
    a. Structured and unstructured data sources
    b. Use language structures to look for e.g., similarities
3. Contextual search
    a. Use contextual information to make world, market, and domain knowledge relevant

4. Cognitive search
    a. Deliver insights using natural and human-like interfaces
    b. Leverage human insight and advanced analysis to continually improve

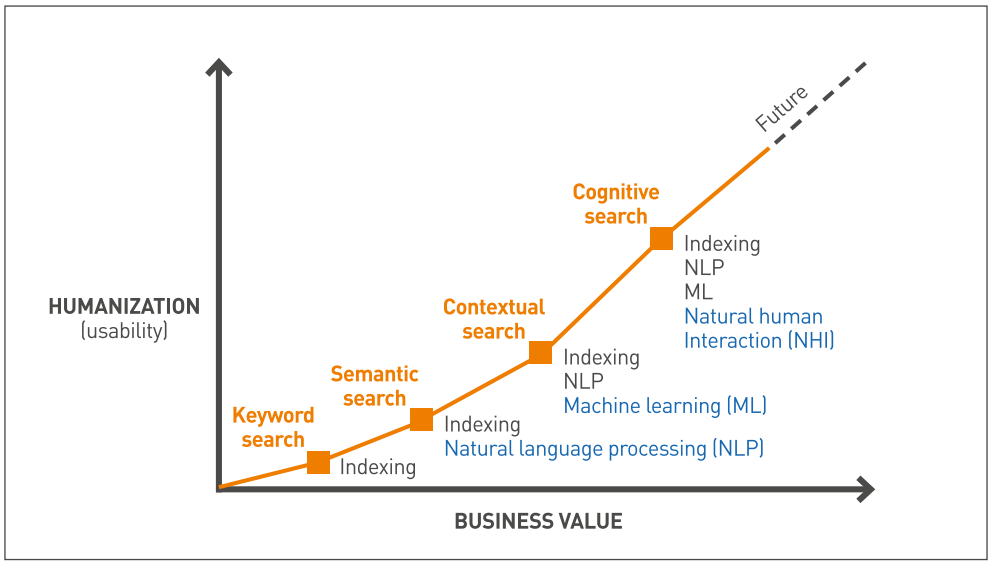

Figure 6: Keyword search evolves to cognitive search *(Source: Curran R and Gualtieri M (2016).)*

The business value of search grows with each maturity level, as does the usability or "humanization". The same maturity levels apply to matching in PES. For example, natural language processing is used to make sense of unstructured data in resumes and vacancy descriptions. Jobseekers, employers, and recruiters invent new job titles and skill descriptions every day. This raises the question which words and terms are relevant for matching a person with a job. Machine learning is a way to gain insights into what results are, and how PES can improve these with the right adjustments. For example, to improve an ALMP, we can analyze information about its input and effectiveness. Contextual information for a PES user is obviously information about the labor market. In a contextual match solution, this information comes in the form of taxonomies on occupations, skills, educations, certifications, and so on.

Cognitive search includes all the above and adds ways to interact and communicate with the system. This involves framing ideas in such a way that the system can understand the user and vice versa. For example, when jobseekers enter their data, the system should make helpful suggestions based on its existing knowledge. After the jobseeker enters their profession, the system could pre-load the most relevant skills and pre-tick certain checkboxes. The suggestions on the screen would be specific to each individual's situation, e.g., recent graduate, long-term unemployed, or recently unemployed. This functionality – we call it **Input Completion** – is based on knowledge organized in a contextual knowledge base.

We observe that technology is evolving towards cognitive systems. And that organizations responsible for labor force management have different strategies in line with the demands of their country or state. Systems that can support these different strategies and use contextual / cognitive search should be flexible, advanced, and easy to use. Are there suppliers that can deliver cognitive search systems for PES? There is still a way to go, but at WCC we believe we can meet most requirements of such a cognitive system. Our next challenge is to make communication with the system even more humanistic.

Requirements of a PES IT Solution to Support any Strategy

For a system to support any labor market management strategy efficiently and effectively, four main elements are required:

- Knowledge management
- Effective management of ALMPs
- Relevant value-added services
- Easy maintenance and configuration

Knowledge management; high-quality data and knowledge of the labor market

Everybody knows the expression "Garbage in, garbage out". Bad data leads to bad results. To get useful results, you need two things: relevant data and a means to interpret that data. In other words, getting relevant data in the system is the first order of business. In a PES job matching system, data is collected from jobseekers, employers, providers of support measures and other sources. Sometimes one by one, but often,

especially with vacancy information, in big batches. The data is usually collected in the form of resumes, vacancies, and so on. But it cannot be used in these formats: resumes and job descriptions contain much more information than required. Most of it is not relevant for matching. Identifying the relevant data and collecting missing information is crucial to the quality of the match result. In a one by one situation jobseekers and caseworkers should be able to manually input data such as job descriptions, skills, competences, and diplomas. From experience, we know that this is more difficult than expected. Most jobseekers are not used to classifying their skills, and have trouble finding a job description that meets their requirements. Often, this lowers the quality of the data they supply. If they are supported in finding fitting job descriptions and the skills usually associated with these jobs, this improves the quality of their data, and thus their chances of finding sustainable work. For this purpose, we have available the **Input Completion Service**.

Making sense of resumes and vacancies and supporting manual input may be easy for someone with extensive labor market knowledge and experience. But for an IT system to do the same requires for all that knowledge and experience to be captured in the system somehow. The first step in making sense of unstructured data in resumes and vacancy descriptions is extracting all relevant data with the help of natural language processing. The next step is putting the relevant data in the right context. For this, the system needs excellent knowledge about the labor market organized in taxonomies and ontologies. This includes knowledge about job titles and their synonyms, related skills or competences, diplomas, and training. *The main knowledge system should be the PES's single source of truth when it comes to labor market knowledge.* All this knowledge must be managed, shared, updated, adjusted, and most importantly, made available to all kinds of applications. Preferably, it should interface either directly or through mapping with systems in other states or countries. This facilitates the exchange of matching data and enables jobseekers in one state or country to apply for jobs in another.

The success of context-based search and cognitive search hinges on managing knowledge to a high degree. Much labor market knowledge is available in the form of taxonomies, such as ESCO, ISCO, ASOC, and ROME3. However, it is essential that a PES has the means to manage and continuously enrich such taxonomies with

information related to the local labor market[4]. The knowledge base can help make sense of data in all applications and services, whether qualifying input, searching, matching, analyzing a gap, referring, or reporting. Currently, most countries use taxonomy information only as a basis for reporting. But labor market knowledge is increasingly needed in other applications and services, and should therefore be accessible to others in the organization. In such cases, it is crucial that opening the knowledge base to new users does not compromise its role as *single source of truth* for all applications in (and outside) the organization. WCC's **Taxonomy Manager** was designed with these principles in mind.

Effective management of ALMPs

Government and politics influence the strategy of most Public Employment Services. That is why they must be able to respond quickly to the demands of policymakers. Youth unemployment and unemployment in people over 55 are just a few of the issues that demand action. PES develop plans to address these issues and formulate them as Active Labor Market Policies. In an ideal system, ALMPs can easily be configured. To achieve this, the WCC Employment Platform uses **target groups, perspectives, and scenarios**. It helps select the right people for any specific ALMP and follows a path of considerations and actions for making the ALMP effective and successful. For example, an unemployed 28-year-old with a university degree needs another approach than a partially disabled 57-year-old. The WCC Employment Platform makes it very easy to configure value-added services for these specific programs. The services enabling these ALMPs can be managed without needing to involve the IT department.

Relevant value-added services to jobseekers, employers, caseworkers, and partners

A good system should make useful services available to all the stakeholders: jobseekers, employers, caseworkers, and management. Services may include **Search** for those who can easily find another job, **Match** when it is more difficult to find another job, **Gap Analysis** to get insight into which skills or certifications are missing to find a sustainable job, and **Referral** to give personal development advice to jobseekers to increase their chances of finding sustainable jobs in the future. All these services are

4 Also see www.pesep.org for the PEPTalk webinar on managing taxonomies by UWV, the Dutch PES, and the PEPTalk on the ins and outs of ESCO.

based on the central knowledge base of the system. Employers have their own need for services – **Search** and **Match** seem the most likely. PES managers need services too: to get **Insights, Intelligence,** and **Reports** about the efficiency and effectiveness of their processes and policies. Caseworkers can use services to support their daily work. This is especially important when high budget pressure forces PES to get all the work done with fewer people. One customer reported that since they started using our system they could handle the same amount of cases with 30% fewer caseworkers – a highly welcomed outcome.

As mentioned before, making communication between IT systems and humans more natural is still a work in progress. But the current technology and the central knowledge base already enable us to help people formulate questions and find answers in a humanistic way. The system can then use its knowledge to understand what the user wants and prefers.

Easy maintenance and dynamic configuration

A good system should be flexible, easy to maintain, and easy to dynamically improve. Custom-made software is expensive to build and maintain, taking it out of the reach of smaller countries and states. In many cases, custom-made software is inflexible: knowledge is often statically coded into the system and very difficult to change. This slows down the adoption of new insights and demands from policymakers and the changing labor market. One of our customers said that it could take up to 6 months to get something changed in their system. That made the system very slow to respond to changes in the market. It also made it hard to study the effect of changes in the system.

A good system should be modular. Trying to implement everything at the same time is usually impossible and probably not advisable either. When new needs arise, it should be possible to add modules or configure these needs into the system, rather than having to develop additional software. Configuring value-added services for ALMPs should be easy, just as managing taxonomies and ontologies. People managing the system should be able to try out possible improvements without disrupting the operational systems. The WCC Employment Platform facilitates this. It allows you to

"experiment" using real data without influencing the operational system. When the test is successful, the new configuration can be published using the **Publication Manager**, which updates the operational system. What makes WCC's software special is that all these management functions can be done by labor market specialists in the PES. They can manage and improve independently from IT department update processes or external consultants.

Modular, easy to configure, ready-made software lowers the total cost of ownership and improves flexibility and results. Finally, the system should include tools to analyze its own performance, the effect of certain processes, and so on.

Implementation Models

Not every country can afford large systems and a big staff to run them. We define three segments with different characteristics and needs:

- Big countries such as Germany and France in Europe
- Medium-sized countries and larger states
- Small countries, states, and regions[5]

Big countries already use custom-made software and staff to manage their systems. They generally handle taxonomy management, ALMP implementation, and systems improvements in-house. They can get additional functionality either by adding more custom-made software or by buying ready-made software modules

Medium-sized counties may prefer an out-of-the-box (COTS) solution. Taxonomies and other knowledge based on general standards and best practices may already be pre-configured. Final configuration can be managed by the staff to fine tune their own labor market model. Configuring and managing ALMPs and regular support is likely also done by own staff.

Small countries and regions may be looking for a complete solution including services like taxonomy management and data management support, preferably in the form of

5 In some countries, Public Employment Services are organized on the regional level.

SaaS with support services. For example, Malta has chosen to outsource the matching process, and is the first to use Matching as a Service (MaaS).

The question remains: can advanced software truly improve the efficiency and effectiveness of getting people jobs? Ehlert (2015) investigated 'the causal effect of the implementation of a new placement software, VerBIS, in German employment agencies'. He found a significant positive effect not just on the employment rate, but also on the quality of placements. The software increased the likelihood that candidates stayed in a job longer than a year and decreased the likelihood of their losing the job within a year. In other words, more people found more sustainable jobs. Ehlert concludes that "although the implementation of the new software [was] costly, the benefits in terms of reduced unemployment greatly outweighed these costs. In general, investment into the technology of the placement process in public employment agencies seems to pay off in terms of more regular employment and in terms of more sustainable placements that exhibit longer tenures". WCC is proud to be part of VerBIS as the provider of its core search and match technology.

WCC is the world's leading supplier of software, consulting, and implementation services for Public Employment Services and Staffing companies. Its Employment Platform sets the standard for a knowledge-driven system that enables PES core services. It is easy to configure, manage, and maintain. Its modular architecture allows for a phased implementation and integration approach. Founded in 1996, WCC is headquartered in the Netherlands.

Creating an IT- and Data-Driven PES 5

by Willem Pieterson

Introduction

The world in which Public Employment Services operate is constantly evolving. Not only are PES still recovering from the financial crisis that started in the late 2000s, but they also face new challenges due to changes in societies, technologies, new phenomena such as 'big data', and ever-evolving philosophies on how to best manage a governmental service organization. For example, many experts expect robotization to lead to massive amounts of changes in societal employment. On the one hand, this creates the challenge for PES to mediate between an increasing number of jobseekers and a decreasing number of jobs. On the other hand, artificial intelligence underpinning robotization creates opportunities for PES to set up new and better systems to serve these clients and potentially reduce their operating costs. Furthermore, being confronted with this evolution brings about the realization that change no longer needs to be seen in terms of discrete events. Change is continuous. PES that can adopt structures and practices that allow them to be more agile and adapt to continuous change are best suited in the long term to satisfy their organizational goals.

But what exactly are the changes that PES face? What kinds of technological changes should PES embrace and what are the consequences of such changes for the ways in which PES are structured and operating?

In this chapter, we seek an answer to these questions. First, we look at technological changes that interact with and drive changes in (big) data, societies, and organizations. Next, we explore the opportunities that these (IT and data) developments offer. Lastly, we discuss some of the challenges that PES will have to overcome when becoming more IT- and data-driven.

Changing worlds; the rise of technology

No one shall deny that technology has impacted life and the societies we live in. From the invention of the wheel through the industrial revolution, technologies have always had a profound influence on our behavior. While most will acknowledge that technological change is ongoing, few realize two key points that are starting to impact organizations working with information technologies. The first is that the pace of technological change is increasing. The second is that many technologies are cumulative (i.e., many technologies come, but far fewer go away). This obviously makes the technology landscape more complex.

We can easily illustrate the increasing pace of technological change by looking at this matter from two angles. The first is the development of computers and the exponential increase in computing power. Moore's Law was first posited by Gordon Moore, one of Intel's co-founders, in 1969. It states that the number of transistors on a computer chip will double every 18-24 months. Up until this day, Moore's law is still in place. This doubling of transistors on a chip basically implies that the (computational) power of computers doubles roughly every two years. Furthermore, this doubling over time leads to exponential, rather than linear growth.

So computers are becoming increasingly powerful, leading to several generations of IT innovations in history:

- 1960s & 1970s | Mainframe computing
  The first wave involved large-scale automation, largely in the back-office. This computerization was aimed at improving productivity and efficiency through large "number-crunching" mainframe systems.
- 1980s & 1990s | Personal computing
  The second wave involved the adoption of mini- and microcomputers, which could more readily be located close to users. This resulted in more innovations involving the front-office functions of the public sector. Examples are systems used by case-workers for data-entry and monitoring or terminals used by telephone agents.
- 1990s – 2010s | Networking and mobility
  The third wave of IT innovations centers on networking and mobility. Not only are most computers connected to the Internet or intranets, computers have been miniaturized, and mostly through smartphones, are accessible from everywhere.
- >2010s | Ubiquity and intelligent IT
  The most recent and currently relevant wave is the rise of intelligent robots powered by artificial intelligence coupled with a ubiquity of devices connected through the Internet of Things (IoT). This creates new types of IT applications (such as intelligent assistants) and has the potential to radically transform existing applications (such as self-driving cars). Below, we will discuss the opportunities of this new phase of technological developments.

The second angle is the argument that more and more individual technologies are being invented at an increasingly higher speed (Brynjolfsson & McAfee 2011). Furthermore, thanks to globalization and the Internet, people are able to learn from and adopt these innovations quicker. For example, while it took about 50 years for 50% of the population to adopt a (landline) telephone, it only took 5 years for the smartphone to achieve similar levels of adoption.

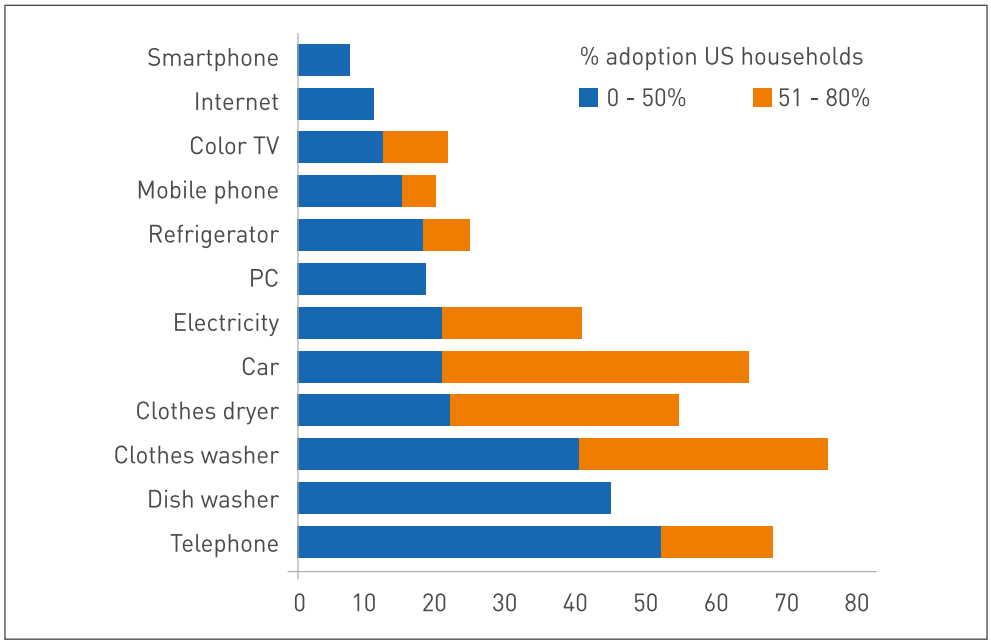

Figure 7: Adoption of technologies in the US

The second key point is the combined point of legacy and accumulation. In a nutshell, many technologies appear, fewer disappear (one example would be that fax machines have fallen out of use). And as the pace of technological innovation increases, organizations will start to use more and more technologies of different generations alongside each other. For example, one analysis[6] showed that American government agencies are still using computer systems from the 1970s, computers with 3.5" floppy disks, mainframes using near-ancient COBOL and FORTRAN programming languages, and systems running Windows 3.1. This co-exists next to every conceivable 'modern' technology and everything in between. This existence of legacy creates problems in terms of maintaining systems, but also regarding interoperability with newer technologies and the sheer complexity of managing an interconnected web of many different systems.

Accumulation also manifests itself at the front-office where organizations have an increasing number of channels to choose from when serving their clients. Pieterson,

6 http://www.pcworld.com/article/3075284/hardware/us-government-agencies-are-still-using-windows-31-floppy-disks-and-1970s-computers.html

Ebbers & Østergard (2017) describe five generations of channels tied to different generations of technological evolution:

Gen.	Period	Label	Alternative(s)	Channels
0	<1990s	Traditional	-	In-person, telephone, mail
1	1990s	Electronic	Digital	Website, email
2	2000s	Social	Social media, Web2.0, Government 2.0	Social media (e.g., social networking sites, (micro-) blogging, video sites, wikis)
3	2010s	Mobile	M-Government	Smartphones, responsive sites, mobile apps
4	2020s	Robots	(Social) Robots, Robotization	Social & conversational robots, artificial intelligence, virtual intelligence

While the table shows that the number of potential channels up until the 2010s was large to begin with, another generation of channels is already about to arrive. This new generation is defined by the use of artificial intelligence to create new types of channels and/or replace existing channels. For example, chatbots, conversational robots, and intelligent assistants have the potential to (partially) replace existing channels. Chatbots are robots that exist in software form only. They use artificial intelligence to respond to written (query) inputs. Initially, they could be used to respond to relatively simple and unambiguous questions. However, as the underlying artificial intelligence learns and becomes more intelligent, it might become possible for chatbots to (partially) replace human-powered service interactions that are based on text (such as chat or e-mail conversations). Conversational robots could perform something similar for spoken conversations. Robotization also creates new types of service channels. Virtual and augmented reality are examples of these. In a PES setting, virtual reality could be used to simulate in-person service interactions for people unable to travel. Furthermore, it offers great potential for (simulated) training and/or coaching purposes, such as interview training for jobseekers.

So, what we are seeing is a channel landscape that has grown quite drastically in size since the 1990s. While some of the newer channels have complemented or partially replaced other channels, we can conclude that far more channels have arrived than have disappeared. Even (traditional) mail is still in heavy use across the world for formal (notification related) communication as well to transfer forms back and forth between governments and citizens.

This situation creates two challenges for Public Employment Services. The first is the multi-channel management challenge of deciding which channels to deploy for what services to which clients in which situations. Because channels all have different characteristics, rendering them suitable for different services, and are all in different stages of deployment at governments and adoption among citizens, this challenge becomes rather complicated. The second is the cost and resource aspect of channel deployment. Every single channel has a set of associated fixed costs for the specific technical infrastructure and resources such as staff, staff training, and branding the channel to match the identity of the organization (Wirtz and Langer 2015).

This (short) review of the evolution of IT within Public Employment Services and the development of the service channel landscape can teach us three important lessons:

1. The landscape is becoming increasingly complex as more and more technologies of different generations are being used throughout the organization. To oversee and control these complexities, PES need data about the impact and performance of these technologies. Fortunately, these same technologies allow to create and store the data that could be used to manage these complexities.
2. The technology landscape is changing faster and as a result societies are changing too. The implication is that PES need to change as well. For this purpose, organizations need information about the changing environment in order to make decisions that anticipate future changes.
3. Organizations need to make decisions about which new technologies to adopt and how to deploy them in order to meet certain organizational goals. Here, PES again need data about the needs and behaviors of their clients, as well as the performance or current organizational processes to determine how new technologies fit into this picture.

From these lessons put together, it appears that there is a symbiotic relationship between technologies (IT) and data. Data is needed to make decisions about the adoption of technologies and to monitor the performance of (technology-driven) processes. At the same time, technologies facilitate the collection, storage, and analysis of data. This creates an IT/Data feedback loop (Pieterson 2016).

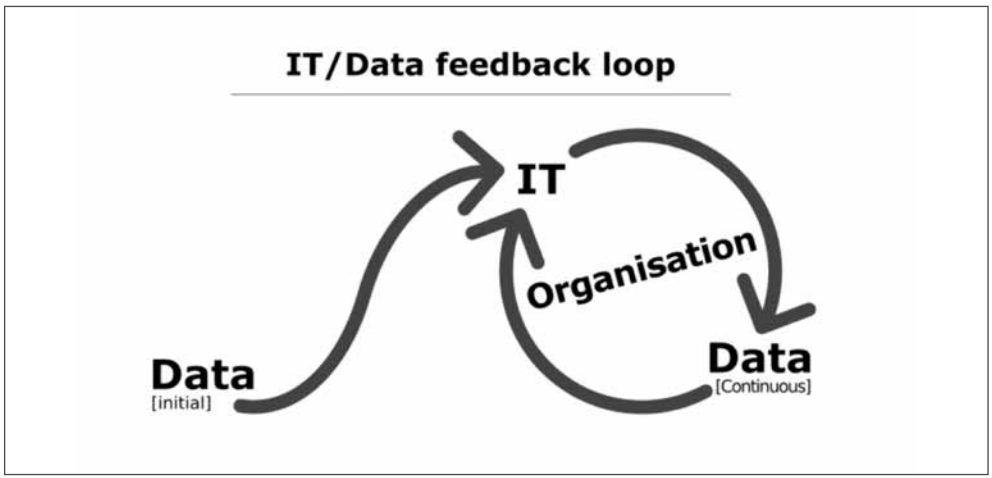

Figure 8: IT/Data feedback loop

Therefore, it comes as no surprise that the use of data within governments is gaining importance and the use of big data is commonplace. But what exactly is big data?

The data revolution

In its simplest form, big data simply refers to very large data sets, although there is no unified idea of what 'big' entails (which arguably is also a moving target). Larsen and Rand (2015) see big data as data "generated through different digital devices such as smart phones, websites, apps, sensors embedded into objects, scanning of machine-readable objects (bar codes) and Social Media postings". More commonly, big data is defined by the three V's (Burns 2015):

- Volume (referring to the quantity of information)
- Variety (referring to the multitude of information types)
- Velocity (referring to the speed with which data is stored, analyzed, and/or changed).

Kreibich (2015) argues that the goal should not be to have big data, but "smart data", which he defines as the combination of big data, clear organizational goals (utility), proper labelling and organization of data (semantics), and high quality of data that is secure and protected. According to Manyika et al. (2011), big data is the 'the next frontier for innovation, competition, and productivity'. In retailing, it was found that by using Big Data-based analytics retailers can realize a 15 to 20% increase in their return on investment (Perry et al. 2013). McKinsey predicts that governments, in Europe alone, could save $100B per annum through operational efficiency improvements[7].

It is not just the data itself that could be analyzed and used to optimize processes and increase efficiency. The data is also a key ingredient, together with lots of computational power and advanced machine learning algorithms, of the artificially intelligent systems mentioned above. Massive amounts of data need to be analyzed and used to create and 'train' these smart robots and intelligent service channels. The more data is available, the better the opportunity to create robots that are intelligent enough for more complex tasks in the organization. For example, an intelligent job matching algorithm could in time learn about the success of matching while learning from previous matches and tweaking the matching system based on certain inputs. However, while the intersection of data and IT seems to be creating opportunities for public employment organizations, there are important challenges that are often overlooked.

The challenges break down into three categories. The first concerns the broader implications of artificial intelligence and new technologies for the labor market and the playing field of Public Employment Services. While new technologies do create new jobs and job categories, there is a fear that artificial intelligence-based robots will replace existing work. Estimates by MGI (2013) suggest that intelligent systems could substitute approximately 140 million full-time knowledge workers worldwide. In 2016, research agency Forrester argued that artificial intelligence might replace 6% of all jobs within the next five years. While both numbers take a US-centric view, there is little reason to assume that similar numbers would not apply to other (advanced)

7 http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/big-data-the-next-frontier-for-innovation

markets as well. From this perspective, many public employment organizations could very well face an increase in workload in the coming years. It is quite possible that the only way they can tackle this is to embrace more technologies and data themselves to work more efficiently and effectively.

Second, there are challenges related to data itself. Most data that organizations collect is not very well integrated, let alone organized. In fact, 90% of all collected data is unstructured (Kim et al. 2014). This implies that the data lacks 'structure'; for example, descriptions, labels, and categories. As a result, organizations spend as much as 90% of their time cleaning and organizing data (Taylor et al. 2014). Also, governments must have the capability to conduct, interpret, and consume the outputs of data and analytics work intelligently (Yiu 2012). In short, getting started with data is an arduous and resource-intensive process. Organizations hoping to achieve results quickly while working with big data are often disappointed.

Third, as mentioned above, technological change is happening at an increasing speed. This could create problems for organizations that are unable to keep up with these changes. Lagging one or two generations of technologies behind may not directly cause problems for a public employment service. But what if it starts to fall behind significantly? What if jobseekers start expecting certain service channels that the organization has yet to embrace? What if jobseekers need to be trained in the use of technology that the organization does not understand itself? What if the organization lacks the data insights for making quicker decisions and being more frugal with increasingly tight budgets? Research has shown that public sector organizations are typically not very fast at adopting innovations and diffusing them internally in any case (Greenhalgh 2005). Furthermore, around 70% of all change programs fail (Beer & Nohria 2000), and there are no signs that this will drastically change in the near future.

Conclusion

Our main conclusion is that PES, while in majority still recovering from the recent financial crisis, will probably face new challenges shortly. New technologies offer opportunities to create further service channels and improve processes. However, the technology landscape is also becoming more and more complex and is changing

increasingly fast. Data that can be collected from these technologies offers the possibility of control and improved decision-making, but is often not very well organized. Even if the organization can use data to encourage change, it is no guarantee that these changes will be successful. Therefore, PES should rethink the role of IT and data within the entire organization and adopt more holistic views on their integral roles in preparing for a more technology-driven and faster-changing future to which the organization can continuously adapt.

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Competence-Based Matching: The Holy Grail?

6

by Fons Leroy

This contribution puts forward a skills/competence-based matching system in preference to the usual diploma- and profession-centered matching system. The complexity, volatility, and speed of change in the labor market force PES to put the focus on skills and competences. We will describe the evolution VDAB underwent from selecting to matching, from a one-dimensional to a multi-dimensional competences-oriented approach. Finally, we will take a peek at the challenges for the future, where acquiring 21st-century skills will play a prominent part.

What follows is a true story.
"Hello! My name is Rachid. I'm unemployed and have no diploma."
Searching for a job did not go smoothly for Rachid. When employers made selections for jobseekers, he was never found. That's because he had no experience and no degree, two criteria that employers select frequently. Search through selection is a matter of "all or nothing": as soon as a search criterion was not met, Rachid was no longer included in the results.

Bridging the gap

In the quest of bringing jobseekers and employers together, techniques, algorithms and technology have changed drastically. In the beginning, 'selection' (search) was the only possibility. Employers could search for candidates with specific attributes in their profiles such as diploma, profession, language, region, and driver's license and vice versa.

Selections only take into account what the user wants (in this example, the employer). The selected criteria are also exclusion criteria: when making a selection, the user usually chooses several criteria such as qualification, profession, and region, but only the profiles or jobs that meet all selected criteria are included in the results.

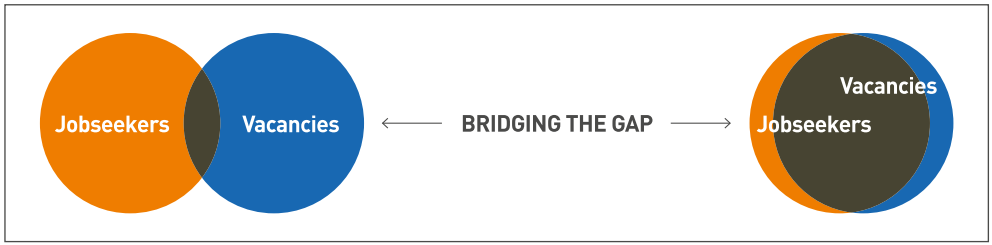
SELECTION:

ONE WAY | MULTIPLE CRITERIA

These criteria – structured data – were implemented in the first 'search tools' that automated the process and improved public employment service delivery significantly. This method has its limitations because the qualitative and quantitative skills gap between supply and demand is growing.

In the next step, technology evolved towards automated matching. In matching, weights are added to the different criteria, achieving more tailored results. But despite the technological advancement, matching based on profession and/or diploma cannot bridge the gap between supply and demand on the current labor market anymore either, even in times of high unemployment.

The limitations of this type of job matching increase even further because we are still mainly focused on degree-based recruitment (at all levels). We usually match – even if only mentally – a vacancy for a job with a diploma in that profession. This approach is strengthened because more and more occupations are defined – often under European pressure – by a (matching related) diploma.



Rachid is a regular at the canteen of the local football club. Every Thursday after training, he hangs out there with his friends. Occasionally the bartender asks them to lend him a hand loading and unloading the drinks delivery. And the guys don't mind at all.

The bottles are delivered in crates and boxes. Rachid and his mates unload them and stack everything in the cellar. The empty crates usually end up getting thrown back into the truck or remain in the hall of the canteen.

Youth workers dropped by the football club regularly to chat with the young guests and help where possible. During one of these visits, a youth worker noticed something interesting: Rachid was neatly stacking the left-over crates. As it turned out, he was also the one who had organized the stock in the cellar. With subsequent deliveries, Rachid made sure his friends brought him the empty crates so that he could organize everything. He clearly enjoyed this type of work.

The youth worker recognized his valuable skills and asked Rachid if he was interested in a job where precision, teamwork, and stacking and arranging goods were important. Rachid accepted the offer and started training to work in a warehouse.

The next step is matching and mediation based on competences, whether they are *expected*, *acquired*, or *to be acquired* competences. In Flanders, VDAB and the social partners have chosen 'Competent' as the standard for labor market activities. This translation of the ROME 3 standard from Pôle Emploi was adapted to the Belgian labor market situation. For example, items like legislation that was only valid in France were adapted to the Flemish legislation, and more detailed information was added to the skills descriptions.

"Competent" is validated by the social partners of the different sector branches. All decisions that were taken to set up "Competent" were agreed upon in a working group with social partners' representatives. They were also responsible for supplying contacts who evaluated and validated changes and additions that were made to the profiles in "Competent. VDAB made the standard operational and integrated it into its information systems through the Comeet database.

The Comeet database is openly accessible through an API (application programming interface) which allows all players on the labor market to use the most up-to-date version of "Competent". For example, partners who already send their vacancies to VDAB automatically (with HR-XML) now use the Comeet service to enrich all their vacancies with competences. Given the fact that more than 70% of all vacancies at VDAB are provided by these partners, it is easy to see that using a strong existing partner network and being recognized as the conductor of the labor market proved crucial for broadly implementing competence-thinking in Flanders.

Competence-based matching enables finding affinities between professions, since many of the same competences are required in different professions. This means that jobseekers without a certain diploma or experience in a particular function, still have the potential to be or become the perfect fit an employer is looking for. A 70%, 80%, or 90% match, combined with the right motivation, can be enough to be a suitable candidate for the job. Indeed, employers can shape the candidate further for the job and the job context through targeted vocational training and training on-the-job.

Matching takes into account respectively what the jobseeker and employer are looking for (demand) and what they are offering (offer). The different criteria, including competences, are given a certain weight. This means the results are not black or white as in the selection approach but a weighted mix of these criteria.

MATCHING:

TWO WAYS | MULTIPLE CRITERIA

This matching approach is a tool for achieving a better and more transparent match between jobseeker and employer.

Standardized competences for fine-grained matching

What do these competences look like? Taking into account that the majority of the Flemish enterprises are SMEs (< 50 employees) without full-fledged HR departments, the matching services provided must allow these SMEs to manage the competences within their company or organization themselves, in line with the changes in their business activities. Therefore, a conceptual approach and language that is close to their day-to-day business is essential. This is why we use 'labor market activities' and the know-how and knowledge (the competences) necessary to perform these activities in the correct way within the context of the specific job.

This type of fine-grained matching based on competences has benefits for both jobseekers and employers. Employers will fish for candidates in a bigger pond because not having a certain diploma or particular experience no longer excludes a candidate from a job. Combined with the right type of targeted vocational training, the skills gap can be addressed.

Competence-based matching provides an interesting answer to the significant increase in bottleneck vacancies. As a PES, we also want to offer opportunities to unqualified young jobseekers (NEETs: not in employment, education, or training), to young people

whose diploma does not offer a good connection to the labor market, to refugees without a recognized diploma, and to people aged 55+, whose acquired competences are more important than their outdated diplomas. As such, there is pressure from both the demand and the supply side to substitute diploma- and profession-centered matching with a broader, more modern matching system.

Competence-based matching is the best alternative. On the one side the system doesn't exclude diplomas, because they are an attestation of acquired competences. But on the other, the system also allows for including prior/elsewhere/otherwise acquired competences in the matching process. In addition, because competence-based matching allows for fine-grained mapping of possible *competence gaps*, it is a better guide for (re) orienting jobseekers and allows for a more effective specification of training needs.

This application makes VDAB the frontrunner for matching amongst its European peers. We are often praised at various international fora on our efforts in competence-based matching and regularly receive foreign delegations who want to know more about our innovations in this regard. VDAB – as well as its peer PES – need to continue investing in the renewal of our labor market instruments as it brings jobseekers and job providers closer together.

On one of the last days of his training, Rachid received a vacancy through VDAB. One of the most important requested competencies was "the correct stacking of crates".

Rachid followed the advice of VDAB and his friends, and applied. After an interview and some practical tests, Rachid was hired.

Today, Rachid is a warehouse manager.

Thresholds for implementation

Despite the obvious advantages and the deep interest in competence-based matching, there is still a lot of hesitation to fully implement the concept. In our experience, it often comes down to the following thresholds.

Budgetary constraints

Adjusting information systems to integrate competences requires a significant investment. But if PES want to play a leading role in tomorrow's VUCA (volatility, uncertainty, complexity, and ambiguity) labor market, they will have to invest in adapted, flexible matching systems.

Organizational and culture change

Competences need to become a part of the habits and practices of customer-facing departments and the customers (jobseekers and employers) themselves. Jobseekers need to reflect more deeply on their skills. Employers need to clearly describe the expected (basic) competences. Counsellors in Public Employment Services need to use more coaching skills to guide jobseekers in the new landscape. This approach abandons the old PES paradigm that customers should always physically pass by the PES office first. We are keen to make our customers as self-sufficient as possible. Only the (initially) non-self-sufficient customers should receive face-to-face support from the PES.

Taking the risk

Both thresholds described above make adopting competence-based matching a complicated decision for PES management. The uncertain outcome of competences in a specific labor market requires a certain leap of faith, which creates a situation where all interested parties avoid being early adopters, instead waiting for proof. This results in an overall standstill. Especially in the VUCA world, PES will have to display another DNA, based on agility, ability, and accountability.

Beyond competence-based matching

So far we have shown how competence-based matching helps to solve the skills gap. This is just the first step. Applications and advantages of working with competences go much further.

Jobseekers gain a much broader perspective on their career possibilities. Jobs that appeared to be new and unreachable before can now turn out to require many skills that were already acquired in previous jobs or education. This, of course, widens the range of potential jobs enormously. This information allows jobseekers to take charge of their own careers in a whole new way.

To help jobseekers manage their careers, it will be possible to track where they acquired certain competences and have those competences certified by, e.g., a former employer. As the acquired competences are validated and secured by "employer branding", their validity to other employers increases.

At the same time this type of information helps jobseekers understand the tasks that need to be performed within a specific job. When recognizing their own ability to perform certain tasks, their confidence will be reinforced, motivating them to take further initiative.

Competence profiles are not a fixed given. They evolve with time, along with job profiles and vacancies. Employers can group competences that are required in their specific company environment and create matching tailor-made job profiles. These job profiles can be used, among other things, to create vacancies with great flexibility. Moreover, through continuous monitoring, information about these job profiles and their evolution is captured and competence profiles are adjusted accordingly, ensuring that the competence standard is always on par with the latest evolutions in the labor market. As such, HR approaches such as 'job crafting' and 'job carving' are also facilitated, and competence-based matching contributes to a policy of sustainable jobs.

Next steps

Competence-based matching is a big step forward in solving the skills gap on the labor market. It may not be the Holy Grail, but it does shorten the path towards it, especially if we can enhance the matching results based on profile data, with recommendations based on data mining of surfing habits and broader career data of the individual and their peers.

We can be sure in any case that 21st-century skills – the competences of the future – will gain importance in the VUCA labor market. These are not so much technical or professional skills, but generic skills that the worker of tomorrow will require in the transitional labor market; e.g., connecting skills, a critical attitude, flexibility, great learning and teaching enthusiasm, creativity, entrepreneurship, and computational thinking. How can we make these competences transparent in a more intuitive matching design? This is tomorrow's challenge!

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The Sharing Economy – Implications for Employment Services

7

by Natalie Branosky

The sharing economy has brought dramatic changes to business models, and has therefore changed how we conceptualize "work." How are employment services evolving to serve this new type of labor market? Some North American examples can provide possible guidelines for Public Employment Services preparing to adapt to and engage with the sharing economy and digital platforms in their own countries.

Exactly what is the "sharing economy"?

The "sharing economy," sometimes referred to in the Unites States as the "gig" economy, found its true meaning in the years including and following the global economic downturn. In a phrase, it is "the businesses of sharing": a braiding together of economic self-interest and business sense that benefits the common good. The term refers to a system of business models that bring individuals together to share their resources with strangers, all of whom are – and this is the key – enabled by a third-party digital platform. It's perhaps not surprising that "sharing economy" has a Wikipedia entry which simply refers to "...a range of meanings, often used to describe economic and social activity involving online transactions. *Uberization* is an alternative name for the phenomenon."

Today, sharing economy architecture can be found for almost anything. We are most familiar with structures such as Airbnb (accommodation) and Uber (transportation), also known as the "rides and rooms" industries. However, locally and globally, people are also sharing "...meals, power tools, dog kennels, boats, driveways, bicycles, musical instruments, even excess capacity in their rucksacks" (McLean 2015). The Internet – and, more specifically, mobile technology and social media platforms – has brought about this economic and cultural shift. From one's living room, global markets can not only be accessed, but participated in fully.

Traditional employment?

If the social economy is altering our traditional business models, then certainly it is changing the nature of work. How are we to understand "employment" in the social economy? With all of this disruption taking place for traditional business structures, there are some practical questions for Public Employment Services and their partners. Does employment in the shared economy fit the usual "supply and demand" scenario we have served over the years? If the shared economy is a dimension of the labor market, are conventionally-designed Public Employment Services and partners evolving to successfully place and support people in this new world of work?

There's no shortage of research attempting to find answers. A recent report from the Brookings Institution in Washington, DC notes that there has been so much controversy generated about online talent platforms, the changing nature of work, and workers' rights that it has been a challenge to clarify the meaning of this type of employment, and therefore the growth of the sector. In short, the sharing economy or the gig economy is conceptually complex, and lines are a bit blurry on how to measure it (Hathaway and Muro 2016).

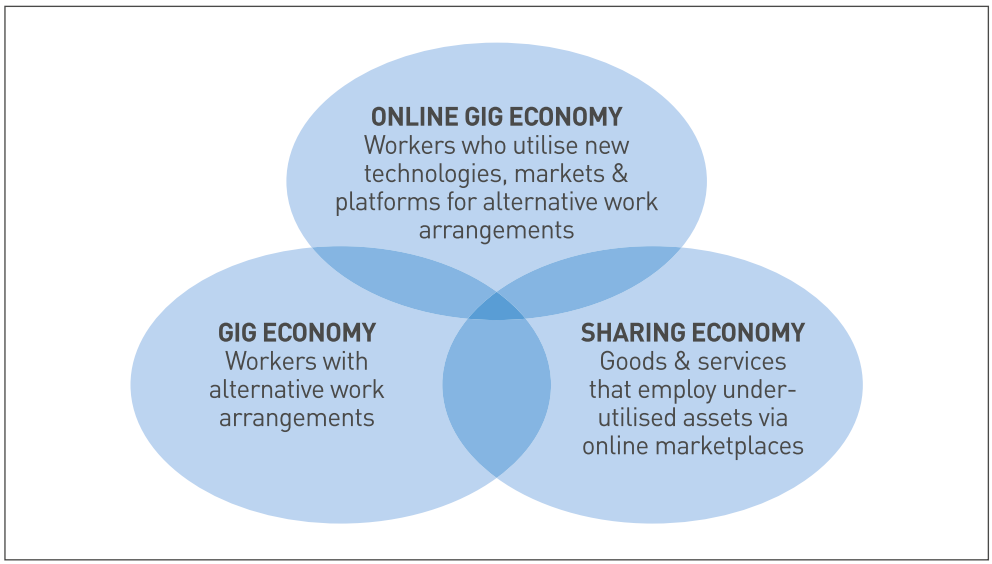

Figure 9: Related Employment Concepts in the Shared Economy

(Source: Modified from a variety of sources, including the American Action Forum, the Brookings Institution, and Mattermark.com)

There are some generalizations that can be made about those drawing income from the sharing economy, as reflected in trends for what are referred to in the United States as "nonemployer firms" (one measure of the business activity of contractor and freelance individuals). The category is significant and growing quickly. This is due in large part to the rise of online platforms, and work that is considered "platform-based freelancing." To give an idea of growth in the US, following the establishment of Uber in the rides sector, the percentage of independent contractors in the ground transportation industry essentially exploded. Between 2010 and 2014, nonemployer firms in ride-sharing grew by 69%, while traditional employment grew by just 17%. That's a big difference, the kind of sectoral growth that America's better Workforce Investment Boards (WIBs), the local overseers of Public Employment Services and their partners, have come to understand over the years. These trends extend beyond rides and rooms, and represent, perhaps unsurprisingly in the United States, a variety of legal arrangements and business models, many of which have a global reach. Some examples include:

INDUSTRY	SHARED ECONOMY PLATFORM
Hospitality & Dining	CouchSurfing, Airbnb, Feastly, LeftoverSwap
Automotive & Transportation	RelayRides, Hitch, Uber, Lyft, Getaround, Sidecar
Retail & Consumer Goods	Neighborgoods, SnapGoods, Poshmark, Tradesy
Media & Entertainment	Amazon Family Library, Wix, Spotify, SoundCloud, Earbit
Business Services	WeWork (domestic & international)

Figure 10: Sharing Economy Platforms in the United States (PwC LLC 2015)

Inspiration for workforce development: the past is prologue

Employment Services will adapt to this new type of employment, and the past can shed light on how to do that. Workforce development and employment programs in the shared economy borrow from some of the best ideas from "the good old days." Thoughtful comparisons can help us to chart the future:

- ***TimeBanks.*** For example, some sharing economy models in the United States are "close cousins" of related employment systems, one of which is TimeBanking, whereby people swap time and skills with one another. A method with a 25-year history, the first experiments with the shared economy provided a new way to link untapped "people capacity" to unmet needs in local communities.

TimeBanking expanded during the height of the Great Recession, as many State and Local governments were forced to cut services and programs for the most vulnerable groups. Local communities that used this method creatively were able to see immediate budget relief as people became empowered to get the things they needed such as "house repair, yard work, child care, elder care, haircuts, carpools, or moving services – directly from members of their community" (Cahn 2015).

Of course, employment is the emphasis here: TimeBank-type systems can help people build bridges back to the monetary economy. Keeping individuals' skillsets active when "traditional economy" jobs are not available and when unemployment rates remain stubbornly high in local communities became a central priority for employment

services when the economic crises deepened. Preparing resumes, practicing interview skills, learning computer skills, or getting support with transportation and child care, are all examples of transactions that have taken place through TimeBanking. For Public Employment Services this is a wonderful alignment of goals and practice, as long as we keep the focus on wage improvements and employment sustainability.

Now for the platform: TimeBanks are getting a boost from new software that makes it easier to log, track, and share hours (the software tracks engagement, reliability, punctuality, and trustworthiness of participants). The open-source code is available to local communities so they can easily build customized websites. Currently used by over 200 separate TimeBanks, it is now being designed to operate on smart phones and tablets, expanding accessibility for local managers and individuals.[8]

- ***Transitional employment (intermediate labor markets / ILMs).*** Transitional jobs are time-limited, wage-paying jobs that combine real work, skill development, and support services to help participants overcome substantial barriers to employment. Transitional employment allows individuals (often from disadvantaged labor market groups) to establish an employment record.[9]

Transitional employment is a type of sharing economy in that those not in work can gradually make a full return to the labor market, while employers can test their suitability for work, often with a supplemented wage package. NGOs and nonprofit organizations tend to have a role, as employers, supportive services partners, or philanthropic funders. This "brand" of employment coincides to a degree with characteristics of shared economy jobs in that they are time-limited (meaning not full-time employment), and "shared" by several entities working together to make financial or skills gains happen.

8 Find out more about the open-source software at http://timebanks.org/

9 A very good resource is the Heartland Alliance's National Transitional Jobs Network (NTJN) in Chicago, at https://www.heartlandalliance.org/nationalinitiatives/our-initiatives/national-transitional-jobs/

What does public policy have to say?

For some guidance on how Public Employment Services can engage with this new concept of work, there is a public policy example worth a look. "Unlocking the UK's Sharing Economy," a review led by Debbie Wosskow, the founder of sharing economy start-up Love Home Swap, points to a role for employment services. As a result, the UK Department for Work and Pensions has provided guidance to Jobcentre Plus staff to direct jobseekers to digital skills-sharing platforms and digital time banks where appropriate, as part of an ongoing drive to help more people into work (Scroxton 2015). The UK's 2015 Budget also listed several policy initiatives to support and expand the sharing economy. This included guidance to Jobcentre Plus staff to "sign-post jobseekers to sharing economy opportunities, and promote the use of "task-sharing sites" to assist in starting a business (Shead, no date).

North American employment programs for the sharing economy

- **The DC Central Kitchen (Washington, DC).** The DC Central Kitchen is a nationally recognized community kitchen that recycles food from Washington DC restaurants and surrounding farms, and uses it as a tool to train unemployed adults to develop work skills while providing thousands of meals for local service agencies and Washington residents in the process. DCCK's Culinary Job Training Program prepares adults facing high barriers to employment for careers in the food service industry. The program specializes in helping adults with histories of incarceration, addiction, and homelessness via a 14-week intensive training that includes culinary arts education, career readiness and real-world internships, and transitional employment. Graduates work in DC's top restaurants and largest hotels. DCCK consistently graduates and places 100% of its participants.

One of the most innovative features (shall we call it groovy?) is the online platform for registering volunteers to participate in community meal preparation. Community volunteers work side-by-side with those participating in the program to prepare meals for lower-income DC residents. The model has become so popular and effective, it

was the Obama family's choice for how to participate in America's National Day of Service,[10] a country-wide celebration of volunteering and service to others.

- **Magnet (Ontario, Canada).** Magnet is a not-for-profit social innovation that fits quite easily into the "shared economy" definition for Public Employment Services, by matching skillsets with need via an Internet platform. Founded by Ryerson University and the Ontario Chamber of Commerce, it is a collaborative hub of post-secondary institutions, not-for-profits, and government, labor, and industry partners working together to address unemployment and under-employment of Canadians. Designed in early 2014, the purpose is to advance careers, businesses, and communities (take note, any PES partners in an economic development role) by bridging the gap between post-secondary[11] recruitment and the ability of students to apply their skills to real labor market needs.

The job matching technology is tailored to communicate students' experiences, accomplishments, skills, and education to potential employers. Magnet serves all Canadians and uses a "blind recruitment" model, emphasizing the principles of diversity and inclusion in the labor market. The network numbers are quite impressive: 90,000 jobseekers, 9,000 employers, 30 universities and colleges, and 240 community partners.[12] What sets the Magnet platform apart from others is the model, a type of "job board in reverse." It is a shared amplification of the supply-side of the labor equation, in a data-rich environment that helps employers to – in a phrase – know who's out there. [13]

- **The Social Enterprise Alliance Job Board.** There are existing platforms where employment services can provide support as well. For example, the Social Enterprise Alliance in the United States boasts an impressive online Job Board which posts

10 See the DC Central Kitchen's volunteer registration platform at https://dccentralkitchen.org/volunteer/ and program enrollment details for the Culinary Job Training program at https://dccentralkitchen.org/enroll/

11 "Post-secondary" refers to education received after high school (usually after age 18) in the US and Canada, such as universities, colleges, academies, seminaries, and institutes of technology.

12 See more at http://www.magnet.today

13 "Magnet and MDB Insight Partner to Strengthen Supply-side Employment Date" at https://www.magnet.today/news/press-release/Magnet-MDB-Partnership-Release-final_2015Sept181.pdf

jobs and opportunities at social economy businesses and organizations across the country. Given the size of the US, this is a useful tool for employment services looking to source income-generating options for clients in those harder-to-access rural markets such as Minnesota, Kansas, and Oklahoma.[14]

Implications for Public Employment Services

As Public Employment Service professionals and partners, how does the expansion of the sharing economy affect the way we work, in this "labor market with a twist"?

- **Sourcing opportunities.** Directing jobseekers to sharing economy opportunities can become part of overall practice. As a supplier of labor, Public Employment Services and their partners may have to look for job opportunities for their clients, but do this in different ways. This could mean hiring staff dedicated to sharing economy research which focuses on income-generating pathways, or identifying skills-sharing environments that can lead to work in traditional labor market jobs. It will require a discerning eye, meaning the development of an employment sustainability plan for each client which prioritizes the reliability of income, and wage and hours progression.

- **Building partnerships.** Over the years, Public Employment Services have become skilled themselves at building partnerships with employers, economic development bodies, nonprofits and NGOs, and local government. There is now a good case for reaching out to tech firms who are designing digital platforms for the exchange of labor and shared goods.

- **Focusing on inclusion.** There is a concern about how to ensure that inequality is not created in the process. Lawmakers have launched some criticism at certain types of sharing economy employment, noting the inconsistency of income and the lack of employment protections that accompany traditional economy jobs. Another reason for pause is the issues surrounding access to digital tools and services: Public Employment Services and their partners will want to think carefully

14 See the Social Enterprise Alliance's Job Board online at http://socialenterprisecensus.org/

about whether sharing economy jobs bridge a gap between those disconnected from work, and their clients' actual ability to link to digital platforms. How do we make sure that those who do not have access to digital devices, Internet services, and computer skills have the tools to get connected?

As ever with economic disruption, there comes great opportunity. Public Employment Services and their partners can adapt by reflecting on past practice and charting a strategic future for jobseekers, communities, and the larger economy.

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Public-Private Partnerships Reshaping National and Global Employment Services Markets

8

by Jacqueline Mazza

Introduction

The model of Public Employment Services that grew up in the industrial economies post-WWI and WWII – single operators of a single national employment service – is no longer in operation anywhere in the world. From Australia to South Korea and from Honduras to South Africa, this old model has given way to a transformation of employment services using new forms of partnerships with a range of private and non-profit actors, creating a diverse and ever-growing market of employment and labor intermediation services. Today's connections between workers and jobs occur more frequently, across and within borders, and in new partnership forms with new technologies largely inconceivable even 50 years ago.

The preceding chapters of this book have detailed how much the "who, where, and what" of connecting workers to jobs has changed along with the increased frequency of job change globally and the increasing skill content of work. This chapter examines how the public, private, and non-profit sectors have joined in partnerships to change the way labor intermediation – the connection of jobseekers to jobs – happens in a more interconnected, more global, and more mobile world economy. It will discuss how these partnerships have helped transform the old Public Employment Services model

into what is better described as an expanding public-private-nonprofit "market" of not just employment services (connecting or matching workers to jobs) but a wider set of labor intermediation services, linking education and training, migration, and economic development to employment[15].

Why not go it alone? The evolution from a single national PES to diverse forms of partnerships

Public Employment Services were first designed to assist job transition in the industrial sector of urban economies when the public sector had sufficient budget resources to completely finance these services. PES in Europe, the United States, and Japan got most of their clients from those compelled to walk in the door to demonstrate they were job-hunting in order to receive their unemployment checks. Only in the 1970s, as the developed economies diversified into services and economies stalled, did Public Employment Services evolve to serve a greater range of jobs and clients, including youth and other new entrants who did not qualify unemployment insurance, those with disabilities, and women reentering the labor force.

We can trace the experimentation of PES with public-private partnerships to many new economic, labor market, and institutional realities, beginning in the late 1970s and 80s. First, the diverse demands on PES required a greater range of services, particularly in new and emerging sectors and with youth. PES needed a greater range of placement and training expertise at very variable levels of scale – e.g., youth just leaving school, support to working mothers, training to adapt to technology, or workplace placement of persons with disabilities. These many connections, involving diverse barriers to employment, could simply not be met with a single standardized model fitting industrial jobs for unemployed workers. Second, old legal restrictions on the private provision of employment services were falling away, particularly after the International Labor Office (ILO) revised its convention banning private employment agencies from charging fees. The growing need for diverse sets of employment services spurred the increase of the number of organizations who could provide these employment services. And third, the economic model of 100% public financing simply

15 A more extensive treatment of the transformation from employment services to labor intermediation services can be found in Mazza 2017.

had become unsustainable even in the richest economies and had suffered in coverage and reputation with the private sector. This was particularly true in the developing world. Developing countries at best could afford a small service in the capital city, typically in a run-down Ministry of Labor building. Many of the services soon got the reputation of having only few listings. Revitalizing Public Employment Services in developed and even more in developing economies involved new strategies to work with employers and with private and non-profit providers of services.

Public-private-non-profit partnerships thus became vehicles to adapt to the emerging deficiencies and the changing global and national market. Among the purposes of these growing partnerships was to: 1) reinvigorate public services and expand their coverage, efficiency, and credibility with employers; 2) develop more specialized ranges of expertise; 3) stimulating market growth and self-service so that public services could concentrate on the harder-to-reemploy; and 4) expand from the provision of placement services to a wider range of services needed to get the harder-to-employ into employment.

On this last point, it is important to remember that while the term "Public Employment Services" continues to be used, PES, particularly in partnership with other providers, have evolved as their client base and the global economy demanded their intermediation between more than just jobseeker and job. They involved themselves in "labor intermediation services", helping match jobseekers not ready for employment to training, youth just leaving education to transition programs, and migrants to work and training abroad.

In sum, the answer as to why not go it alone became obvious. To go it alone with at best a 1950s model for a 1950s economy in an industrialized economy simply does not fit the 21st century. Going it alone today, for any PES without partnerships, risks both obscurity and irrelevance.

Partnerships – expanding the coverage, reach, and effectiveness of employment services

It would have been hard to predict the variety of public-private-non-profit partnerships that unfolded in both the developing and developed world, driven by changing global forces. Partnerships discussed in this chapter encompass the public employment service in a range of relationships with private employers, private or non-profit service providers, or associations to jointly provide employment or other employment-related services. Sometimes this involves direct contracting, but also voluntary cooperation from joint promotional events, listings on national employment portals, and information sharing.

Finn (2016) explains that many OECD countries have a long tradition of delivering employment services through grants or contracts to other public and non-profit institutions, with a more recent expansion to contracting to for-profit organizations. This includes grants and contracting with various types of training institutions to carry out active labor market policies or providers of specialized services, for example, for vocational rehabilitation.

If we talk about partnerships *directly with* Public Employment Services to expand their reach it is best to talk about a spectrum of models, from the single public service model with no partnerships (which honestly no longer really exists) to a fully-privatized model with no public service offices, as in the Australian Star Network. Even these direct forms are a limiting concept, as the next section will discuss, because each of these models also interacts in an expanding public-private-non-profit market.

So, returning to our spectrum of private and non-profit providers working directly with publicly-financed employment services, we can find today[16]:

Model A: Fully Publicly Financed and Executed PES

Indeed, it is hard to identify a public employment service that does no contracting out to either public or private providers, whose employees are public employees, and

16 This typology is based on an earlier version in Mazza J (2013).

which has no associated services conducted by other private or non-profit entities in coordination with the PES. Technically, Tunisia is the only country that has not lifted the legal ban on private employment agencies, but Tunisia's PES exhibits a lot of regional diversity, drawing on non-profit providers and drawing in other public agencies.

Model B: National Public Service Operating in Association with or via Networks of Public and Non-Profit Providers

In this model, more common in the developing world, a public service operates with public financing but is supported in a range of collaborative forms with private and public providers. These collaborative forms are intended to extend the reach and client base of both a national public service and independent private and non-profit providers. The key in this model is that the public service essentially maintains its own set of public offices and trademark as a public service, but draws on private and non-governmental providers in a collaborative fashion, both formally, with possibly some limited contracting, and informally, particularly through loose associations at the local and regional level. Collaboration can be as loose as listing providers and job listings voluntarily on a national employment portal (e.g., Mexico), consultative councils with the private sector guiding the PES, sharing equipment and joint access for job registry and placement (e.g., Honduras), subcontracting special placements (e.g., Mongolia), or contracting specific services to local providers (e.g., Turkey and the Brazilian State of Ceara contracting the State Employment Service to an NGO provider).

Model C: Formal Association of Public and Private Providers

This model is midway between a public and private service, in that the functioning of the public service has formally integrated and made more systematic its collaboration or subcontracting of service provision to private providers. Management Boards, in many cases based on tripartite structures, have considerable importance as a formal public-private collaboration for policy decisions as well as other policy subjects in more in key European and African Public Employment Services, but were found to be less important in the Americas or the Asian-Pacific Public Employment Services (IDB/OECD/WAPES 2015, 64).

As in all models, it is important to remember that most Public Employment Services are in continual states of experimentation and evolution via such partnerships. Models that began as loose collaborations such as in model B can evolve to more formal associations, as is occurring in many OECD nations. The United Kingdom, for example, evolved its model by competitively contracting to private providers first in select areas of high unemployment. As both these providers and contracting relationships/monitoring of results evolved, they now contract out to private providers service provision to all those who have been unemployed for over 12 months, with the public service handling the short-term unemployed (those under twelve months).

Honduras provides an example of how a developing country can creatively use a private-partnership in this association form to expand coverage, effectiveness and the number of jobs open listed without money changing hands. To avoid potentially years of bureaucratic wrangling, Honduras used a simple legal agreement signed with the country's major business association to engage the local business association offices to register new jobs with their associates and, drawing on the national job bank, place jobseekers in employment. Although the national PES was at first worried about the competition with a private provider, the results shown in Figure 11 indicate what has been observed in both the developing and developing worlds, namely that the use of partnerships expands the client base of *both* the public and private sectors because the intermediation market has such limited coverage generally that more clients are drawn in with diverse providers who reach different types of clients.

In 2004, when the Honduran Public Employment Service started rethinking its basic employment service, relations between the public and private sectors were strained if not non-existent. Each saw the other as highly politicized. But the Hondurans engaged the country's major business association, *el Consejo Hondureño de Empresa Privada,* in a public-private partnership for employment services that did not require any money to change hands; i.e., public-sector bureaucracy would not be a constraint. The public sector would maintain a national job bank and give computers and training to any COHEP office. The private sector would create a satellite office in their existing facilities with staff to register jobs of their members who regularly came to the offices

for meetings. Placement and matching from this now national database could be made at either a public or private sector office.

The change in seven years – through and out of the 2009 financial crisis – is demonstrated below.

Indicator	2004	2011	%increase
# companies registering jobs	200	10,000	5,000
Jobseekers served/year	4,000	23,000	575
# of public offices	2	6	300
# of networked private offices	0	6	700

Figure 11: Seven Years in Honduras: Partnership Expands both Public *and* Private Providers

(Source: Mazza J (2017).)

In the last two forms of partnership, described below, we see an evolution away from the identification of distinct public and private roles to the delivery of a comprehensive service that integrates the role of public, private, and non-profit actors, including those representing workers.

Model D: Autonomous Service with Tripartite Management

Evolving a previously solely public service to be independently managed by a typically tripartite partnership – public, employers, and trade unions – is a sophisticated management form that has only been attempted in the most developed OECD countries. This form means the principal decisions on the management and provision of services is being made in a tripartite or shared management form. The Netherlands had attempted such an autonomous service but modified it in later years. Some developing PES have allowed state-level Public Employment Services to adopt an autonomous state service, such as Nuevo Leon in Northern Mexico. However, in this model, the autonomy lies principally in how it is financed, as the principal services and eligibility follow the national employment service.

Model E: Completely Privatized Public Employment Service

Within the OECD, only Australia has evolved over decades to a fully privatized public employment service. The Job Services Australia Network involves a sophisticated contracting out to over 310 private, community-based, and public organizations. These organizations are paid to place a group of jobseekers. Such groups consist of a fair mix of easy and difficult to place people. It uses a sophisticated pricing model for paying providers for the difficulty in employing unemployed individuals with multiple barriers to employment (IBD/OECD/WAPES 2015, 101). The Star rating system continually monitors performance of its providers, adjusting their ratings for future contracting (for more detail see the chapter about Australia later in this book). Saudi Arabia has fully contracted out its service to a single provider, a distinct model from the Australian Star System.

This set of five models, with its great variety within each model, only comprises public-private-non-profit partnerships *with* Public Employment Services. This, however, does not tell the full story of how employment services – public, private, and non-profit – operate in a wider market, shaping and evolving how employment and labor intermediation connections are made in the global marketplace. For that, we need to open the lens even further.

A look at the wider, evolving, national intermediation markets

The range of partnerships with Public Employment Services described above can be seen as leading towards a national intermediation service of interlocking public, private, and non-profit providers. But this ever-evolving "octopus" is only one type of cephalopod in the sea, even if one of the larger creatures, particularly among non-fish. The expansion of a national intermediation "market" is also driven from within the private and non-profit sectors. There are private providers operating in niche markets with little connection to a larger national service, national online-only services, such as Monster.com or Caribbeanjobs.com, and international placement firms that operate across countries, such as Manpower Inc. and Ingeus. How these relate to national labor intermediation services is never static; as demand and technology advance, partnerships form later, in loose association or formal. A new publication by the World Association of Public Employment Services, the OECD, and the Inter-American Development Bank, identified six areas where Public Employment Services could

play a role in the critical new area of better matching labor skills to labor demand: identification, orientation, profiling, verification, matching, and development.

To take the sea analogy one step further, different intermediation fish may swim alone at first, but start swimming together over time as they find new ways to collaborate in a changing ocean. Mexico's PES, one of the larger Public Employment Services in Latin America, expanded its range of partnerships as it evolved its national employment portal. Private employment services such as Manpower now list jobs on the national Portal (www.empleo.mx). As a result, the public service gets more visits and expands its offerings nationally, and the private services reach jobseekers they might not have reached otherwise. In Hungary, the public employment service created a nationwide career guidance service in partnership with local universities (IBD/OECD/WAPES 2015, 95-96). Figure 12 describes a public-private partnership in Riviera Maya, Mexico, led by the private sector Hotel Association. In its beginning, the public employment service only played a minor role but the partnership – and the employer demand to serve the growing tourism sector – diversified and changed the intermediation market, which in turn changed the role of both the local public service and a new Association employment service, as well as their connections to national providers.

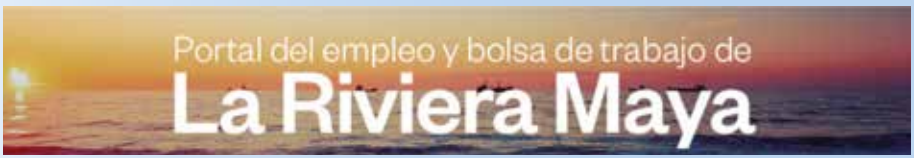
South of Cancún, Mexico, new luxury hotel investment was expanding rapidly. The area later became known as "the Mayan Riviera" for its beautiful stretches of beach and proximity to a number of famous Mayan ruins. Hotels could not hire fast enough, but job rotation was very high and employers weren't finding the workers with the right skills they needed.

In 2008, if you were looking for a job in this job-rich area, employment services were hardly operating. You could go to the main square of the (then) small town of Playa del Carmen and look at the flyers posted on the wall. The major hotels were mostly going it alone to hire, taking to busing in workers from as far away as Chiapas: a 3-hour trip early each morning and then 3 hours back at night. The local Hotel Association of Riviera Maya (AHRM) would receive jobseekers in its offices and try informally to place them in its member hotels. The national

public employment service, STPS, did not have an office in Playa del Carmen; jobseekers were supposed to be served by the Cancún office, an hour north, but that office was overworked, so essentially all this new job growth was happening, albeit in fits and starts, without much involvement from public or private employment services.

The AHRM launched a public-private partnership involving local schools, large and small hotels, and the Labor and Education Ministries, to begin to more systematically address a much larger and growing demand for skilled human capital to meet the expected growth and tailor its market to luxury tourism.

By 2015, both with the support of the Association, financing from the Inter-American Development Bank's Multilateral Investment Fund (MIF), and even more via joint "voluntary" collaboration the intermediation market has expanded in ways, again, not imagined. Including the following key changes:



- The Association created its own private employment service "bolsa de trabajo" working directly with its employers that has climbed to 25,000 public listings.
- The Public Employment Service opened an office in Playa del Carmen enabling jobseekers to get walk-in job placement and counselling service and access to short-term training programs with local firms,
- Virtual Intermediation can be done via the AHRM's *Portal del Empleo* as well as the national portal, enabling the region to reach jobseekers across the country;
- Programmed Intermediation through local job fairs brings together the public service, AHRM's service, and individual employers;
- Hotel Driven-Intermediation (individual hotel methods);
- Use of private recruiting agencies;
- Outsourcing (contracting placement agencies);
- Use of social and electronic media;

- Job profiles developed by AHRM for 103 job types, enabling more rapid recruitment, hiring, and training to skill needs.

Figure 12: A Changed Intermediation Marketplace: Beachfront – Riviera Maya, Mexico

(Source: Mazza J and Kappaz C (2016).)

Conclusion

As demands for more rapid job transition, more skilled employment, and more job movement across borders changes the demands on employment / labor intermediation systems, so too will partnerships play expanding and diverse roles. It is important to understand this larger set of interactions between public, private, and non-profit providers as a national intermediation market in which Public Employment Services play leading, supporting, and informational roles all at the same time. The innovations in public-private-non-profit partnerships will undoubtedly offer a new range of unexpected roles as we look to the near future. Stay tuned!

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Labor Market Partnerships

9

by Pierre Georgin

The environment in which Public Employment Services operate is being reshaped by fundamental changes in the world of work and in the way labor markets function as a result of demographic shifts, new technologies, and globalization. As the nature of work and the structure of employment evolve, workers across the globe can now expect to experience many job transitions throughout their careers. This means that they will have to continuously develop and redeploy their skills (OECD, 2016a). In many emerging and developing economies, these structural transformations are occurring against a backdrop of high levels of underemployment and the prevalence of informal types of employment (ILO, 2015). Poor labor market outcomes in turn contribute to rising inequalities not only in terms of income, but also in terms of access to quality employment opportunities. In addition, labor productivity growth, which is ultimately the main driver of improvement in living standards, has tended to decline in both advanced and developing countries since the mid-1990s, partly as a result of demographic change and mismatch between the supply and demand for skills (OECD, 2016b).

PES have an important role to play to tackle these complex labor market conditions and address the underlying vulnerabilities associated with high rates of underemployment, especially among vulnerable groups. To do so, PES have to widen the range of their

responsibilities compared to those they were initially established for in many countries. While the traditional tasks of job-brokerage and the provision of labor market information (LMI) remain at the core of their activities, PES must evolve their practices if they are to contribute to the broader objectives of boosting labor market participation, stimulating job creation, promoting inclusive growth, and raising labor productivity. It is by connecting jobseekers, employers, and other labor market actors that PES can best contribute to the achievement of these objectives.

In recent years, employment services have also had to operate in an institutional climate characterized by continued austerity measures, which means that public services have to be delivered more efficiently without compromising quality. At the same time, where other actors such as private employment agencies, non-profit organizations, and social enterprises have been gaining importance in many countries (Van Gestel, 2012), PES often only have a small market share in terms of vacancy coverage and access to key labor market information. This means PES need to engage with a range of actors to share know-how, expertise, and resources, and to offer complementary services to jobseekers and firms (OECD, 2015).

In this context, the real question is not so much *why*, but *how* PES should cooperate with other actors such as government departments, regional and local authorities, private firms, employer's associations, unions, and non-profit organizations. This chapter will review key issues related to the conditions required for these forms of cooperation to be effective. It will be argued that the local level is often the most pertinent for setting up partnerships, and that the adoption of appropriate governance mechanisms is a key success factor for such partnerships.

How can local partnerships support the work of Public Employment Services?

Public Employment Services may face very different challenges and opportunities depending on the country or region in which they operate. Strong variation can be observed across local labor markets in many domains such as the economic base, the age structure of the population, and the various barriers to employment encountered by individuals. This means that PES have to adapt their support and services to local

conditions. In the rest of this chapter, 'local' will refer to the level of local labor markets. These can be approximated using the statistical unit of "travel to work" area, which corresponds to an area within which the majority of the resident population works. At this level, local policymakers are best positioned to connect with local businesses, sectors and clusters, nongovernmental organizations, and community groups.

In many countries, Public Employment Services PES operate at the local level. In a recent survey, 80% of 73 countries reported having local PES offices, and some other countries used alternative forms of local service delivery, for example through branch offices (IDB/OECD/WAPES, 2016). Developing countries, notably in Africa, were more likely to report not having employment services at the level of local labor markets.
While operating at the local level is often a necessary condition for PES to better serve their clients, this alone is unlikely to be sufficient to address the complex challenges posed by current trends in the job market. In some instances, it is essential that employment services coordinate with other policymakers and agencies at the local level, particularly when addressing skills mismatch and promoting labor market inclusion of disadvantaged groups.

Addressing skills mismatch and avoiding the low skills trap

Recent OECD work has shown that major disparities often exist between localities in terms of both the level of skills of the workforce and the demand for skills by employers (OECD, 2016c). This can result in a variety of skills situations at the local level, as shown in Figure 13. Some local areas may find themselves in a position of imbalance, with a relatively high demand for skills and low supply of skills (skills deficit) or vice versa (skills surplus). In the bottom-left corner the supply of and demand for skills are both relatively low, creating a "low skills equilibrium" often characterized by a large share of low quality jobs in poorly productive firms. Local areas that fall into this category may be trapped in a vicious circle of unfavorable labor market outcomes as local employers do not have access to the skills they need to move to higher value-added production and individuals are not incentivized to invest in skills when they are not valued in the local labor market. To avoid this fate, local policymakers should consider ways to boost the skill supply and demand in a coordinated way. This requires a collaborative long-term strategy that involves partnerships within which PES can play a central role.

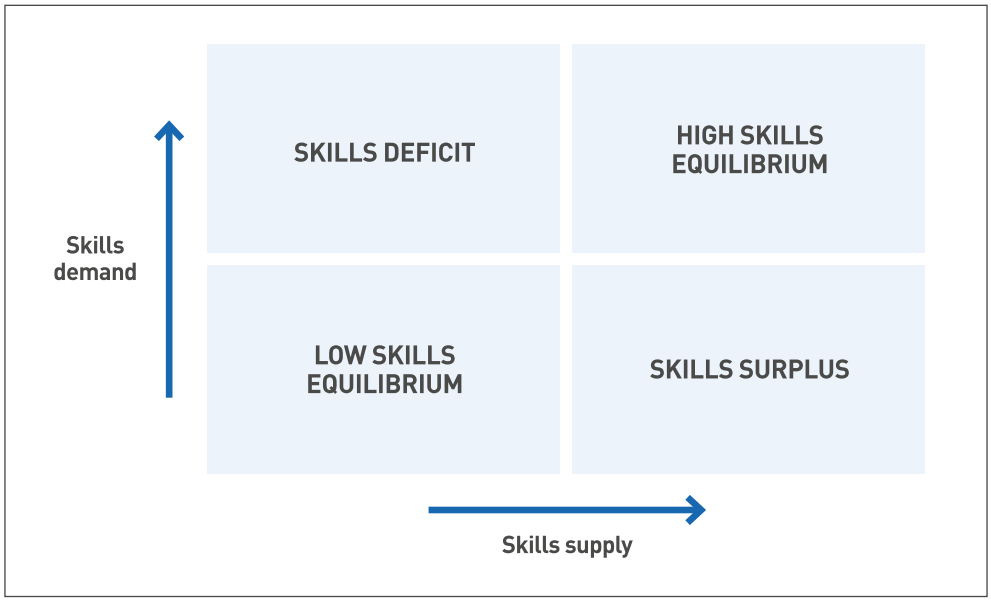

Figure 13: Understanding the relationship between skills supply and demand

(Source: Froy F and Giguère S (2010).)

Reducing skills mismatches in local labor markets has become a key policy goal in many countries given their high economic and social costs (ILO, 2013; CEDEFOP, 2014). But employment services cannot be expected to complete this essential task on their own. Aligning the supply of and demand for skills requires a complex combination of intervention, in which other labor market actors may have a key role to play. To name a few, skills identification requires high-quality LMI that PES may not have in-house; skills profiling, which aims to assess individuals' employability, can be supported by statistical and IT tools offered by various organizations; and life-long career guidance implies a range of activities by providers other than PES, such as competence assessment, advocacy, and mentoring.

On the supply side, employment services can coordinate interventions aimed at upgrading the skills of the workforce by linking up with training providers to offer a range of training programs that are tailored to the needs of their clients (classroom-based, training on-the-job, or off-the-job courses). When labor market demands are changing rapidly, PES can also facilitate job transition by profiling individuals' skills in a

way that focuses on transferable skills. To do so, it may be more effective to collaborate with organizations that have the capacity to measure and analyze large amounts of information on the level and nature of jobs and skills offered and demanded both in the short term and in the future.

On the demand side, PES may be asked to contribute to broader economic development objectives by boosting productivity and innovation within firms. At the local level, this can be realized not only by helping employers to fill vacancies, but also by encouraging human resources management practices that allow for the full use of skills in the workplace. Collaboration between employment services and research institutions may also be fruitful in helping local firms to translate applied research into new product, services, or production processes, thus shaping the demand for skills locally.

Labor market inclusion of disadvantaged groups

High levels of unemployment, particularly among certain disadvantaged groups such as youth and immigrants, remain a key labor market challenge in many countries. Encouraging the inclusion of those farthest from employment into the labor market is a particularly difficult task given the heterogeneity of individuals' profiles and the multi-faceted nature of the barriers that they face to access employment opportunities. The fact that PES are operating at the level of local labor markets is a crucial asset in this domain, as this proximity is a necessary condition for the adoption of a truly client-oriented approach. Yet proximity in itself is not enough. Strong coordination is required with other organizations working in fields such as training, education, housing, and childcare to provide a comprehensive response to the issue of labor market inclusion of disadvantaged groups.

In more remote local areas, it is obviously more difficult for PES to ensure sufficient proximity with clients. Yet it is often in the population living outside of the main urban centers and in rural areas that the greatest labor market challenges are observed. A place-based approach may be needed to offer services that are tailored to the specificities of these local areas. Partnership arrangements with local stakeholders may be the best option to deliver such services. Depending on the local context and the specific challenges and barriers faced by the local population, partners may include

local governments, private agencies, and NGOs. The latter may, for example, have an important role to play in reaching disadvantaged youths living in deprived suburban areas and showing a certain lack of trust towards traditional public institutions.

These two examples clearly show the benefits of adopting a horizontal approach that involves all those that have a stake in the labor market. In particular, PES should consider partnering with other actors and organizations to broaden their coverage of vacancies and workers, access external sources of information, and increase their capacity to address complex and multi-faceted labor market challenges faced by individuals and firms. Local or regional contexts are often ideal to build effective "coalitions of purpose" between various policymakers and organizations. In many instances, the search for good local data can be a catalyst for action, encouraging people to collaborate across policy silos to build concrete engagement around critical issues. For this reason, PES can play a central role in setting up partnerships at the local level, by acting as a focal point where detailed LMI is gathered and strategic decisions are taken by a range of local actors in a coordinated way. While a recent OECD-IDB-WAPES joint report (2016) provides a detailed picture of the potential partners for PES, the following section of this chapter will focus on the conditions required for the establishment of successful partnerships.

Conditions for successful partnerships

Building successful partnerships around Public Employment Services is not an easy task for several reasons. First, it requires that PES develop a strong culture of cooperation, which is not as straightforward as it may seem given that in most countries, these public agencies have been designed to carry out tasks for which they had overriding responsibility on their own, like inspecting the labor market. It also means breaking down policy silos within public administration and building trust between potential partners coming from the public, private, and not-for-profit sectors. There are a number of general factors to bear in mind when setting up partnerships (OECD, 2014):

- **Organizational structure**: To be efficient, a partnership should have a recognizable and autonomous structure to help establish its identity. The structure should have stability and permanence as well as flexibility, and it is helpful if there is a certain independence from political influence. It is also important to review lines of communication to ensure that all partners are kept informed and involved. Sufficient human and financial resources are also needed.
- **Preparation**: Preparatory work is crucial for developing a steady and effective partnership. Careful research into the local context in which the partnership will be operating must be part of this phase. The labor market challenges and opportunities of the area should be assessed and effective measures designed. One of the most important aspects of this phase is to identify the right partners and establish clear roles for each.
- **Work plan**: Partnerships need to develop a long-term strategy if they are to work effectively and last. When partnerships are set up at the local level, this strategy should include a vision for the local area focusing on the desired outcome, an action plan identifying shorter-term priorities, and a coordinated working program including activities and measures that will contribute to the achievement of long-term outcomes. The work program should indicate the interests and targets of all partners and include activities and measures that will contribute to the improvement of socio-economic and labor market outcomes.
- **Implementation**: In this phase partners are in regular contact to coordinate implementation, to extend and supplement the working program with new measures, and in some cases to test new approaches. Public relations activities should inform the wider public of the targets, activities, and measures of the partnership.
- **Monitoring**: A comprehensive monitoring system should be used to assess a partnership's achievements, determine improvements to be made, and adapt further planning. A partnership should be evaluated periodically and should publish reports to demonstrate the added value of its work (for more details, see OECD LEED Forum, 2006 p 25-28).

In addition to these practical aspects, the effectiveness of local partnerships largely depends on the existing foundations at all levels of governance. Governance mechanisms can play a key role in facilitating or impeding coordination efforts at the local level. Labor ministers of the G20 countries have acknowledged that robust cross-sector coordination is necessary to support job creation, particularly at the local level, and that such joined-up approaches require adaptable and flexible policy management frameworks to be effective (OECD, 2015).

For employment service actors to be able to take a leadership role in improving labor market outcomes in local areas while also meeting national goals, it is important that some degree of flexibility is introduced in the management of employment programs and policies at the local level. The OECD defines local policy flexibility as "the possibility to adjust policy at its various design, implementation, and delivery stages to make it better adapted to local contexts, actions carried out by other organizations, strategies being pursued, and challenges and opportunities faced" (Giguère and Froy, 2009)". A notable difference exists between two types of flexibility: operational and strategic. Operational flexibility applies to the delivery of programs, and refers to the leeway given to individual PES officers to decide on the service that should be offered to a particular client. Strategic flexibility applies when local PES can adjust programs and policies to their local labor market and priorities agreed jointly with other partners. The achievement of strategic flexibility may require that national governments provide sufficient latitude when allocating responsibilities in designing policies and programs, managing budgets, setting performance targets, deciding on eligibility, and outsourcing services (Giguère and Froy, 2009).

Another important condition for PES to effectively contribute to employment and economic development objectives is the existence of local capacities, which have been found to be somewhat mixed among local PES offices (OECD/IDB/WAPES, 2016). Insufficient local capacity impedes not only the effective delivery of services to clients, but also the ability to make the most of the flexibility needed to design tailored programs and to coordinate interventions with other partners. Where capacity issues are observed, it may be necessary to invest in capacity-building activities before granting local flexibility.

Conclusion

In the coming years, Public Employment Services in all countries will have to deal with the immense task of improving short-term labor market outcomes while preparing people and firms for a new world of work that will be fundamentally transformed by digital technologies as well as globalization and demographic shifts. At the same time, Public Employment Services are increasingly expected to contribute to broader objectives of raising labor productivity and promoting inclusive growth at the national, regional, and local level. Given the complexity and multi-faceted nature of the challenges ahead, the approach and practices of employment services will have to evolve to make way for more horizontality and collaboration. In practical terms, this means opening up their governance, service delivery, and quality assurance to a range of actors in the public, private, and third sector. It is at the level of local labor markets that Public Employment Services are best positioned to partner with policymakers, local businesses, education and training providers, and NGOs to address challenges such as reducing skills mismatch and integrating people from disadvantaged groups into the labor market. While setting up partnerships in itself is not an easy task, the effectiveness also depends on the existence of appropriate governance mechanisms granting some degree of local flexibility to tailor employment policies and programs, as well as sufficient local capacities within local public employment service offices.

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The Australian Employment Services System

10

by Sally Sinclair

Introduction

The Australian employment services industry is unique. At the time of writing, no other country in the world has managed to build a Public Employment Services sector in which the frontline work is entirely carried out by non-government organizations – employment services providers – contracted by government to offer place-based and free labor market assistance to jobseekers and employers alike. Australia's innovative system has attracted praise from the OECD, and continues to incite the interest of government organizations the world over.

Unemployment is a perennial problem with a vast and negative impact not only on national economies, but also on the physical and mental well-being of individuals and communities. It is a problem that responsible governments cannot afford to ignore, directly and intimately linked as it is to the overall health of a nation. But it is a problem that is complicated in both breadth and depth – the factors contributing to unemployment vary tremendously from nation to nation, from community to community, and from individual to individual – and as with the labor market aspect of the problem, the ever-increasing speed of technology-driven change makes the whole question into a rapidly moving target.

Australia's innovative outsourcing of Public Employment Services in the late 1990s initially attracted some criticism. It was misperceived both as converting the plight of the unemployed into a private money-making opportunity and as an abdication of government responsibility. But such attitudes are unjustified, and built upon a misunderstanding of a 'quasi market' reform which has now lasted 20 years as an integral and effective bridge across Australian social services and labor markets.

For one thing, the Australian Government has not abdicated responsibility: contracted employment services providers are closely and constantly monitored and held accountable to a strict compliance framework. Contract cycles are short (mostly three years) with underperforming companies losing the right to re-tender and the market condensing from over 300 providers to under 50 in the first 20 years. Within contract periods, there are business reallocations that remove market share from underperforming companies and award it to those with better placement figures. These reallocations are driven by the 'Star Ratings' system, which determines the relative success of providers in achieving employment outcomes through a complex calculation that takes into account size and geographical location of allocated sites, characteristics of the local job markets, and characteristics of the provider's jobseeker case load. Providers scoring 2 or less out of 5 are deemed 'underperforming'.

Australian employment services are one of the most closely monitored industries in the world, with market competition forces simulated by stringent and relative performance standards upon which the continuance of an individual provider's contract entirely depends. Remuneration for the provider also mostly depends upon successfully placing jobseekers in work, and in most cases the placed client must remain in employment for at least 26 weeks in order for the provider to receive full remuneration (called an "outcome payment"). The administrative burden for providers is considerable, and the rewards are hard-earned.

An advantage of this system design is that it focuses provider efforts at a local level on achieving successful employment outcomes. Star Ratings and outcome payments drive practice that is responsive to changing labor market conditions and attract a mix of innovative service models delivered by small and large organizations, not-for-profit and private companies, and specialist and broad-based services. The system's

effectiveness depends on information conduits between government and providers as well as sophisticated data and analysis of labor markets. The Australian Employment Services IT System (ESS) and its allied web and mobile services represent a rich and evolving platform simultaneously serving the needs of government, providers, jobseekers, and employers.

Brief history of employment services in Australia

Post-WWII Australia was a nation in expansion. Population growth was high and the economy was flourishing. The **Re-establishment and Employment Act 1945** gave rise to the creation of the **Commonwealth Employment Service** (CES) to manage reinstatement in former employment for returned servicemen. The scope of the CES's activities broadened progressively until in 1978, the provisions of the Act were extended to officialize its role, de facto by that time, as an employment service for the general public. The service remained entirely government-run until 1997.

The process of tendering out employment services was begun by the center-right government in 1996. In 1997, a separate government body, **Centrelink**, was created to handle welfare payments across a range of functions, including unemployment. Centrelink was also tasked with referring jobseekers to contracted providers. 1997 also saw the trial of the **Work for the Dole** program, in which people receiving unemployment benefits were required to undertake community-oriented services as part of the 'mutual obligation' requirement which has been central to the Australian unemployment support philosophy ever since. Work for the Dole was officially enacted in 1998 and is still in force.

At the same time an umbrella organization started representing the interests of this emerging sector to government, and quickly became an important player for policy refinement and for information transmission between government and providers. The **National Employment Services Association** (NESA) has been the peak body for the unique Australian employment services industry since its inception and continues to evolve with the sector. Today NESA not only provides professional development and recognition for employment services workers and assists the various government departments charged with assuring the continuing quality of the services provided to Australian jobseekers and employers, but also offers professional consultation

and advice to international bodies seeking to learn about the Australian approach to employment services overall.

The first contract round of fully outsourced employment services, called **Job Network**, began in 1998. Part of the former CES was recast as **Employment National** and thrown into competition with a host of new private providers. In the first contract round (1998-2000), Employment National was awarded 50% of the market share, reflecting its former status. The reallocation of market share that ushered in the second contract round in 2000 was competitive, based on performance outcomes, a logic which still drives contract tenure and business reallocation in the current system.
The second contract round saw the market share of Employment National drop from 50% to 25%. In the third contract round (2003-2006, extended to 2009), Employment National lost the remainder of its market share. The then center-left government retained the system for a 4th and 5th contract round (2009-2015), with adjustments and a new name: **Job Services Australia**. At the time of writing, we are in the 6th contract period, which began in 2015 under the name **jobactive**.

Over the last decade various specialist employment service contracts have similarity evolved alongside the mainstream system. Current contracts include Disability Employment Services, the Community Development Program (for remote areas), and Transition to Work for young jobseekers. In total the various contracted providers support a caseload of about one million jobseekers, of which about 800,000 are jobactive clients.

Development of the ESS (Employment Services System)

By the time the employment services were first outsourced, the National Employment Office operated a large mainframe computer running the early *Job Bank* system. This inceptive system was characterized by data stored on magnetic tapes kept in a "silo", which had to be mechanically transported to readers for data access and recording. The first incarnation of the mainframe and its allied data storage and retrieval systems occupied 1000 m^2 – two entire floors of the old Medibank House building in Canberra – and involved 30 full-time operators working in around-the-clock shifts.

The operating costs of this system, which despite its computational core still required a considerable amount of manual manipulation, were a major factor influencing automation, but it was not until 2003 that improvements would finally allow the required operators to drop to just five full time staff.

Figure 14: Former Medibank House, Canberra, home of the first ES mainframe

Between 1988 (when the original employment services mainframe was relocated from Melbourne to Canberra) and 2005, the ESS hardware saw four major upgrades, was moved to a more secure location in Canberra, and shrank dramatically in size. Data was progressively transferred from the robot-and-silo system to disk storage between 2010 and 2012, and the fifth hardware upgrade finally saw the decommissioning of the robotic tape system, allowing the entire mainframe to occupy just $3m^2$ of space.

Between 2014 and 2015, the mainframe was re-platformed to a modern server environment, dramatically reducing hardware costs. The old mainframe was finally decommissioned on 2 February 2015 at 4:30pm, marking the end of an era, and a shift in IT philosophy from megalithic centralized systems to a more decentralized and granular network architecture.

The first user interfaces known to CES employees in the 1980s were line-command systems affectionately known as "Greenscreens", which allowed data entry and limited searching of the mainframe's Integrated Employment System (IES). The advent of the Internet in the early 1990s saw the sudden and dramatic evolution of user interfaces, and the shift to contracted providers required significant alterations to system functionality.

By 2000, a new system called Employment Assistant (EA2000) had been introduced which had more user-friendly interfaces, but which still comprised "dumb terminals" interfacing with the IES mainframe that did all the work. Matching algorithms were an integral part of the IES business logic, lining up jobseekers with job vacancies. By this stage, the expanding use of the system and the growing complexity of both the data and the business logic were placing increasingly stringent processing demands on the IES and its hardware.

The shift away from mainframe philosophy has allowed progressive integration of more and more web-based and API-driven applications, and more recently, the inclusion of mobile apps to the array of tools that make up the current ESS. At the time of writing, the whole system is being recoded to improve performance – itself a massive task – and is moving to an "asynchronous" model which promises to further increase responsiveness and hence improve the end user experience.

These modifications to the employment services' computational environment have been, and continue to be, carried out by a dedicated team of departmental programmers and IT specialists whose highly responsive and tireless behind-the-scenes work commonly goes unheralded and remains unknown even to many within the employment services industry, and certainly to the broader public. They manage

to achieve major upgrades to the ESS with little or no down-time and are the "silent achievers" who have helped to make the unique Australian employment services industry what it is today, and who continue to contribute greatly to its evolution.

The Australian jobseeker's experience – search, match, and more

Those seeking work in Australia may be eligible for financial support from the government welfare body Centrelink, which initially assesses each applicant's support requirements using a standardized tool called the JSCI (Job Seeker Classification Index). Centrelink may refer eligible jobseekers with their JSCI results and related obligations to a local and appropriate employment service provider (jobseekers can voluntarily select their provider if they wish). Some candidates may be referred to a more detailed assessment to determine capacity to work, which may result in a referral to a disability employment service provider. Some jobseekers may not be eligible for financial support but can often still receive support from an employment service provider at a lower level of funding.

Claiming income support for most people comes with a specific obligation, administered by the provider, to be actively looking for work. Many jobseekers must show evidence of having applied for at least 20 positions per month. The provider communicates compliance to Centrelink, who administer the jobseeker's welfare payments. While service models differ, providers generally assign a personal employment consultant to each jobseeker to assist them in whatever way is appropriate to their needs, including vacancy matching, interpreter and translator services, assistance with applications and resumes, and job readiness training and support, both prior to and following placement into employment. Employment consultants will continue to monitor the performance of placed jobseekers for 26 weeks, offering support, resources such as clothing and transport funds, and guidance where necessary. Some jobseeker assessment results make them eligible for more and different support from providers including assistance with overcoming non-vocational barriers such as health, family, housing, and language problems. These jobseekers often also qualify for different obligation conditions.

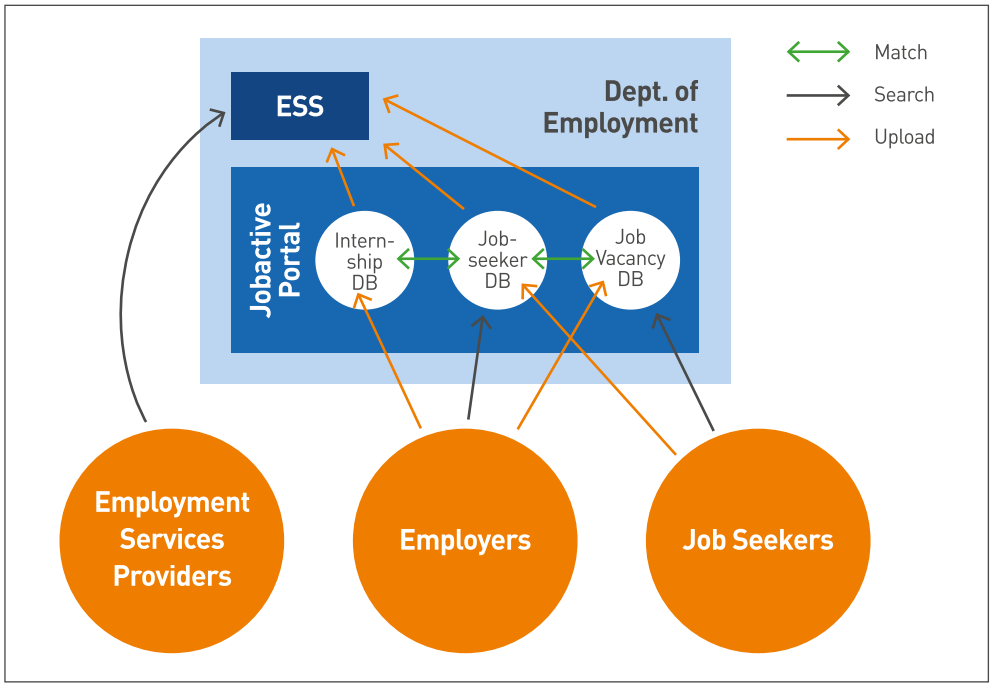

Figure 15: Employment Services Ecosystem

Jobseekers can look for vacancies by any of the traditional means: direct candidature, vacancy listings in print publications, and of course online job boards. But one of the strengths of the ESS suite of applications is a vacancy matching service – the jobactive website/app – that can be used by employers to advertise vacancies and by jobseekers looking for work, and which also has an interface with providers via their own ESS portal, allowing providers to be directly involved with the job matching process. This is a powerful tool allowing all the benefits of modern computational job matching services, with the added plus of having input from employment services providers, who have a more fine-grained knowledge of their local job markets, and, of course, direct and detailed involvement with the jobseekers themselves. Providers also engage with employers directly to gain knowledge of their recruitment requirements and to offer demand-driven placements. Sometimes providers offer mentoring to employers to improve their capacity to support particular employees.

The jobactive portal allows uploading and storage of resumes and other documents, which can be attached to applications with great ease, streamlining the application process considerably. Employers can also see anonymized job profiles through the employer portal and contact candidates directly if they see a profile they like. Of course, commercial online job services also offer such things, but unlike the major commercial sites, jobactive is free for all users – jobseekers and employers – as it is part of a government service. As the jobactive search tool operates in a context that includes local providers, there is a much greater potential for forging long-term relationships between providers and employers in a given region, which in turn can augment the utility of a computational matching tool by injecting local human knowledge into the mix.

A new initiative called "prepare-trial-hire" is being launched to offer young jobseekers new options for gaining work. It has prompted the jobactive development team to extend the portal to allow employers to advertise internships and jobseekers to access them via their employment services provider. This functionality will see even more cooperative integration between jobseekers, employers, and employment services providers, mediated by the ESS technological suite.

Conclusion

Unemployment is a pressing issue in the majority of the modern world, and one that will only worsen as global population growth meets increasing technological encroachment on the workplace. Solutions to the problem require – in the first instance – dedicated attention from government, as the fundamental problem is a social one, falling squarely into the realm of governmental responsibility. But Australia found, toward the beginning of the 1990s, that a purely governmental solution lacked the reactivity and granular local knowledge that small, independent organizations could potentially offer. Initial experiments with contracted employment services were promising, leading to the eventual complete contractual outsourcing model that Australia now employs. But such a solution would have been chaotic were it not for the strict compliance framework that the Australian Government put in place and continues to administer over the system, and that framework itself would not have been achievable without the tight IT integration that the Australian solution has enjoyed since its inception. The Australian model for Public Employment Services is a rich and evolving marriage

of technology, governmental control, and the dynamics of the non-government sector and private enterprise. It is a constantly adapting forum bringing together all major stakeholders – government, employers and providers, mediated by the sector's peak body NESA – with the common goal of offering the most efficient and effective service possible to those who most need it: people seeking work.

Sally Sinclair is the CEO of the National Employment Services Association (NESA), the peak body for the Australian employment services industry. She has over three decades of domestic and international expertise in the design, development, and delivery of employment and related services. Sally is a member of the Minister's National Disability and Careers Advisory Council, of the G20 Civil Society 20 (C20) Steering Committee, and the Vice-Chair of the OECD LEED Programme's Forum on Partnerships and Local Development.

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Abbreviations

In this book the following abbreviations are used:

ALMP Active Labor Market Program

COTS Commercial Off-The-Shelf

OECD Organisation for Economic Co-operation and Development

PES Public Employment Service

In this publication, "PES" covers any public or semi-public organization concerned with workforce development, (un)employment, and job placement.

SaaS Software as a service

The new world of work is characterized by globalized employment, a mobile yet vulnerable workforce, and the challenges of demography and rising income inequality. Technological changes in both the demand for and supply of skills have a cross-cutting influence on how labor markets develop. In this book, different stakeholders from international organizations in the private and public sector discuss which role Public Employment Services and Workforce Development Agencies ought to play in the labor market today and in the future, why cooperation is crucial, and what kind of support digital services and software can provide for a more effective and efficient delivery.

Managing Workforce Potential – A 20/20 Vision on the Future of Employment Services seeks to inspire decision-makers in and around the labor market to reflect on governance, services, and partnerships to better cater to the new world of work.

Why this book?

As a world leader in Public Employment software solutions, WCC believes in sharing knowledge. It is our vision that combining what we know and sharing this with the world leads to maximum value across the board. This is why we take initiatives to both exchange and expand expertise. For example, we started the PEPTalk webinar series, which provides a platform for Public Employment Services to share their knowledge about best practices and their vision on the labor market. This book is another example; with its publication, we aim to contribute to an all-round clearer vision on the developments in public employment.

*The term **20/20 vision** is used to express normal sharpness of vision. It means you can see clearly at 20 feet what should normally be seen at that distance.*

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