

Social Network Analysis of Job Market Stakeholders in Morocco

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Abstract. Skill mismatch is a major cause of youth unemployment and missed economic opportunities in many countries. Reducing skill mismatch requires close collaboration between different employment stakeholders. Unfortunately, prior work mostly overlooks studying the extent of collaboration between such stakeholders.

In this paper, we perform a social network analysis of the relationship between around 80 employment stakeholders in Tangier, a major Moroccan city. We collect data through questionnaires that these stakeholders fill out. Our results reveal little exchange of information about job market needs between different stakeholders. Surprisingly, we find no evidence that youth receive information about job market needs from other stakeholders.

Keywords: Social Network Analysis, Job Market, Education, Stakeholder Analysis

1 Introduction

The mismatch between higher education and the job market creates major social, political, and economical problems in many countries [1]. Every year, a large number of graduates are unable to find jobs. The resulting youth unemployment causes major social and political tensions. Paradoxically, at the same time, employers are unable to find candidates with the required skills. Such skill shortage results in reduced competitiveness and missed economic opportunities in these countries. Reducing such mismatch requires close collaboration between different employment stakeholders. However, prior work mostly overlooks examining the extent of collaboration between different employment stakeholders in countries that struggle with skill mismatch.

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In this paper, we examine the extent of collaboration between different employment stakeholders in Morocco where the unemployment rate of university graduates is as high as 18% [2]. The International Monetary Fund [6] lists skill mismatch as a major cause of youth unemployment in Morocco. Our study focuses on the Tangier region, which has witnessed major economic growth in recent years mainly due to the implantation of large automobile manufacturers.

We analyse social network data collected through questionnaires during the opening day of the USAID (The U.S. Agency for International Development) career center in Tangier. The USAID Career Center is an initiative from USAID Morocco and the Moroccan Ministry of National Education, Training, Higher Education and Scientific Research that aims at improving youth employability [3]. 79 representatives of different employment stakeholders filled out a questionnaire about their relationship with the other stakeholders present at the event. These stakeholders belong to different categories: private sector, public sector, universities, vocational schools, youth, recruitment agencies, funders and civil society. Two types of relationships are of interest of this study: 1) exchange of information about job market needs and 2) technical and financial support.

Our results reveal very little exchange of information about job market needs between different stakeholders. Indeed, our results suggest that the private sector and universities in Tangier do not exchange information about job market needs. Moreover, we find no evidence that youth receive information about job market needs from other stakeholders. This result probably reflects mistrust between different stakeholders. On the other hand, the network about technical and financial support reflects more interaction about different types of stakeholders. Such finding may be due to tax reductions and publicity that organisations obtain by sponsoring events. Such finding may also reflect a culture of charity in Morocco.

2 Related Work

Prior work about skill mismatch examines the effect of skill mismatch on wages [8] or job search time and employment duration [9]. Such studies find that over-education results in lower wages [8] and lower employment duration [9], but has no effect on job search duration [8]. Concerning prior work on stakeholders, Chapleo et Al [7] worked on identifying and prioritisation of stakeholders in Portsmouth University in UK . The study finds that the highest priority stakeholders are students, local employers, university staff, academic and research bodies, and local government/city/authorities. Cathy et Al [11] compared the perspectives of different stakeholders (alumni, faculty body, incoming students and industry) in the School of Hotel Administration at Cornell universities about skills required for employment. That prior work, however, does not study the extent of collaboration between different employment stakeholders. Collaboration between different stakeholders has been examined in other contexts including environment [4, 5], house demolition in China [10] and the automotive industry in Nigeria [14] and firms [12, 13].

3 Methodology

Prior to the official opening ceremony of the USAID career center in Tangier, USAID staff visited main employment stakeholders in the region and invited them to the opening ceremony. 79 stakeholders attended the ceremony and filled out a questionnaire on a tablet handed to them. These stakeholders belong to the private sector (e.g. Renault, Daher), public sector, youth organisations (student organisations), universities (professors and administration), recruitment agencies, vocational schools, funders (USAID and GIZ a German development agency that provides services for international development) and civil society. The full list of stakeholders is given in the appendix. The questionnaire included many questions including listing stakeholders with whom they have a relationship of type "exchange of information about the job market" and with whom they have a relationship of type "financial and technical support". More specifically, for each of these relationship types, each stakeholder has to go through the stakeholder list and click on stakeholders with whom they have such type of relationship.

Based on the questionnaire data, we build a network of exchange of information about the job market and a network of financial and technical support between the 79 stakeholders. Next, we symmetrize the networks in the sense that if A mentions a link with B , we consider that the two stakeholders have a link even if B does not mention such link. The reason we symmetrize these networks is that the question phrasing is unclear about the relationship direction. Finally, we fold the networks in order to obtain a network between the stakeholder categories i.e. private sector, public sector, youth organisations, universities, recruitment agencies, vocational schools, funders and civil society.

4 Results

4.1 Information exchange about job market

Figure 1 depicts a visualization of information exchange about job market between stakeholder categories. The youth category contains 8 participants, universities contain 11 participants, private sector contains 14 representants, public sector contains 11 representants, civil society contains 10 representants, recruitment agencies contain 10 representants and funders contain 7 participants. Surprisingly, we see that youth are isolated from the information exchange about the job market. A probable explanation to this isolation is that youth are not considered as a key stakeholder in job market exchange. Unfortunately, this isolation hampers youth from choosing the right path for their future education. Another surprising finding is the absence of direct communication between universities and private sector, this absence is probably blamed on mistrust.

To examine further these relationships, in Figure 2 we look inside each category and examine the exchange between the 79 stakeholders. The network density 0.003 along with a large number of isolates indicates little collaboration between stakeholders. The graph depicts a star topology, where ANAPEC (National Agency for the Promotion of Employment and Skills), a public institution

that aims at promoting youth employability, is connected to different actors belonging to different types, which imply that ANAPEC exchange the information with several stakeholders among them universities, private and public sectors and also civil society. This result was expected since universities and vocational schools send annual reports about the number of graduates to ANAPEC, moreover many job vacancies are posted in ANAPEC website, which anticipates the star topology.

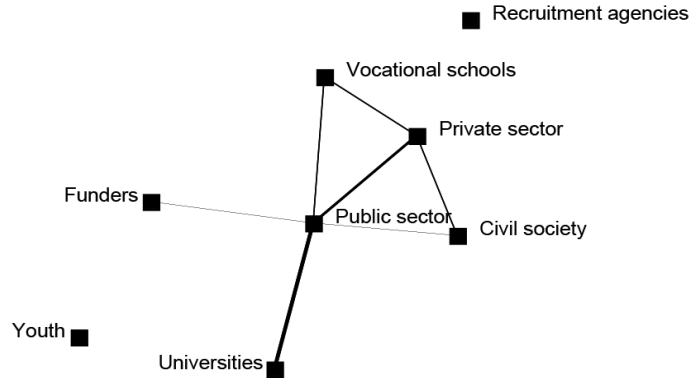


Fig. 1: Social Network of the job market information exchange between stakeholder categories.

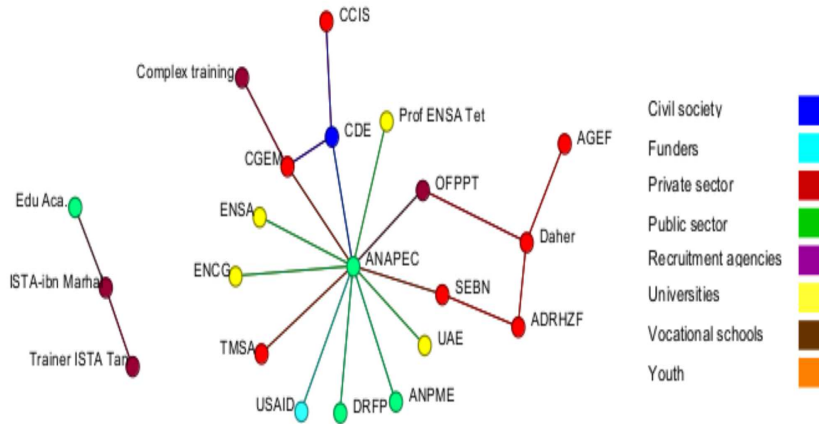


Fig. 2: Social Network of job market information exchange between stakeholders (58 isolates are hidden).

4.2 Technical and financial support

Another question that needs to be addressed is the technical and financial support exchange between job market stakeholders. Figure 3 unveil which stakeholder category provide technical and financial support to the other. We see that youth benefit from the support of different stakeholder: public sector, civil society principally. These funds are mainly used to sponsor events organised by youth involved in associations, that is to say, youth must join extracurricular activities to exchange with job market stakeholders.

We see also that youth are highly connected with different categories. A probable explanation is: stakeholders support youth financially to enhance their visibility, also to be released from the tax program as an offer from the government [15]. Figure 4 gives us a more detailed picture, similarly, we observe a low density of 0.003 and a high number of isolates. We can see clearly that we have a sparse graph with small components. Dyads and triads relation are present in this network between the same category and from different categories, as we see IAM, an actor of civil society, has the highest betweenness, which imply that IAM control over information passing in this network. IAM is a member of JA Worldwide, a non-profit youth organization, that helps youth to develop their entrepreneurial skills.

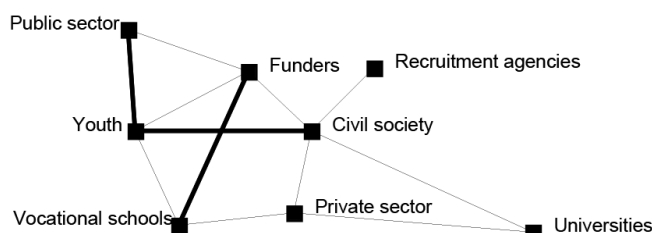


Fig. 3: Social Network of the technical and financial support between stakeholder categories.

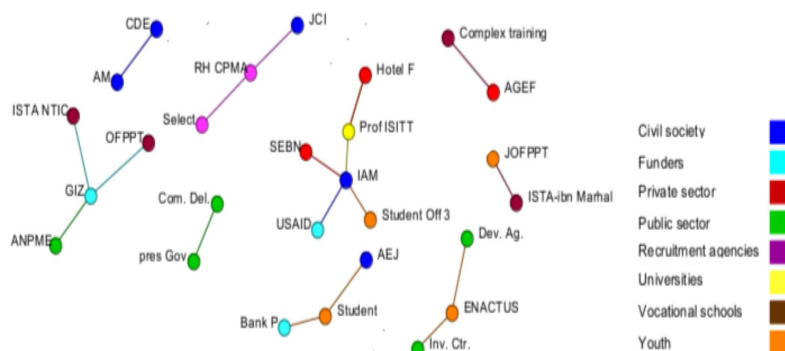


Fig. 4: Social Network of the technical and financial support between stakeholders (52 isolates are hidden).

5 Limitations and Future Work

Surveys have few limitations such as: missing accuracy, the inability to find how much thought have been put by respondents while answering questions. Despite such limitations, surveys are considered a practical way to obtain SNA data information from a large number of people effectively. SNA is a process to map and measure the relationships and flows between stakeholders, and provide us with a visual analysis of the job market stakeholders. On this study we only addressed two aspects of the exchange between job market stakeholder in Tangier, as future work, we intend to apply this study to several regions in Morocco in order to compare them and to reinterview these stakeholders to see the evolution

of their collaboration. Finally, as surveys only cover a group of person we intend to use social media in the future.

6 Conclusion

In this paper, we examine collaboration between employment stakeholders in the city of Tangier in Morocco. We use social network data collected through questionnaires during the opening day of the USAID career center in Tangier.

Our study reveals little exchange of information between different stakeholders about job market needs. More specifically, our study finds no evidence that the private sector and recruitment agencies inform universities about job market needs. Lacking reliable information about job market needs, universities are unable to adapt their curricula to the job market. Similarly, our study finds no evidence of any stakeholder informing youth about job market needs. Youth are thus unable to choose an education that fits job market needs. The main actor that receives information about the job market is the ANAPEC. Thus ANAPEC is an important actor that USAID career centers should collaborate with in order to promote youth employability in Morocco.

On the other hand, we find that youth receives technical and financial support from many stakeholder categories. Similarly, universities and vocational schools receive some technical support from the private sector. This probably indicates that the lack of information exchange about job market needs is not due to a lack of funds. The lack of information exchange may be due to mistrust between different stakeholders. In other words, stakeholders could believe that even if they share information, no action will be taken. Therefore, there is no need to share such information. We intend to test such hypothesis in future work.

Finally, we believe that our methodology can be replicated in other countries that struggle with skill mismatch. The methodology helps draw the big picture about the (lack of) collaboration between employment stakeholders. The methodology identifies the important actors that new interventions should build up on. The methodology also identifies missing connections that new interventions should work on building.

7 Acknowledgement

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References

1. WEF GAC Employment Matching Skills Labour Market Report 2014 Accessed May 12, 2017. http://www3.weforum.org/docs/GAC/2014/WEF_GAC_Employment_MatchingSkillsLabourMarket_Report_2014.pdf.
2. Unemployability rate for graduates Accessed April 26, 2017. http://www.hcp.ma/Taux-de-chomage-national-selon-le-diplome_a267.html.
3. Usaid Career Center Accessed April 26, 2017. <http://vcc.careercenter.ma/vcc/presentation>.

4. Prell, Christina, Mark Reed, and Klaus Hubacek. Social Network Analysis for Stakeholder Selection and the Links to Social Learning and Adaptive Co-Management. In *Social Networks and Natural Resource Management*, edited by Orjan Bodin and Christina Prell, 95118. Cambridge: Cambridge University Press, 2011.
5. Lienert, Judit, Florian Schnetzer, and Karin Ingold. Stakeholder Analysis Combined with Social Network Analysis Provides Fine-Grained Insights into Water Infrastructure Planning Processes. *Journal of Environmental Management* 125 (August 2013): 13448.
6. Morocco: Selected Issues; IMF Country Report No. 16/36; November 30, 2015 - cr1636.pdf. Accessed May 4, 2017. <https://www.imf.org/external/pubs/ft/scr/2016/cr1636.pdf>.
7. Chapleo, Chris, and Christopher Simms. Stakeholder Analysis in Higher Education: A Case Study of the University of Portsmouth. *Perspectives: Policy and Practice in Higher Education* 14, no. 1 (January 2010): 1220.
8. Di Pietro, Giorgio, and Peter Urwin. Education and Skills Mismatch in the Italian Graduate Labour Market. *Applied Economics* 38, no. 1 (January 20, 2006): 7993.
9. Blzquez Cuesta, Maite. Youth Labour Market Integration in Spain: Search Time, Job Duration and Skill Mismatch. *Spanish Economic Review* 7, no. 3 (September 2005): 191208.
10. Yu, Tao, Geoffrey Qiping Shen, Qian Shi, Xiaodong Lai, Clyde Zhengdao Li, and Kexi Xu. Managing Social Risks at the Housing Demolition Stage of Urban Redevelopment Projects: A Stakeholder-Oriented Study Using Social Network Analysis. *International Journal of Project Management* 35, no. 6 (August 2017): 92541.
11. Enz, Cathy A., Leo M. Renaghan, and A. Neal Geller. Graduate-Level Education: A Survey of Stakeholders. *The Cornell Hotel and Restaurant Administration Quarterly* 34, no. 4 (1993): 9095.
12. Rowley, Timothy J. Moving beyond Dyadic Ties: A Network Theory of Stakeholder Influences. *Academy of Management Review* 22, no. 4 (1997): 887910.
13. Grandori, Anna, and Giuseppe Soda. Inter-Firm Networks: Antecedents, Mechanisms and Forms. *Organization Studies* 16, no. 2 (March 1995): 183214.
14. Ogunlowo, Olufemi O., Abigail L. Bristow, and M. Sohail. A Stakeholder Analysis of the Automotive Industry's Use of Compressed Natural Gas in Nigeria. *Transport Policy* 53 (January 2017): 5869.
15. Bulletin Officiel N: 3873 Du 21/01/1987 - Page: 11. Accessed May 12, 2017. <http://adala.justice.gov.ma/production/html/Fr/107633.htm>.

Appendix: Stakeholders abbreviation and their meaning

Table 1: Stakeholders abbreviations and types

Organism	Abreviation EN	Type	Full name
Chambre de Commerce- d'Industrie et de Services	CCIS	Private sector	Chamber of Commerce - Industry and Services
Confédération générale des Entreprises du Maroc	CGEM	Private sector	General Confederation of Moroccan Companies
Association marocaine des industries du textile et de l'habillement	AMITH	Private sector	Moroccan Association of Textile and Clothing Industries
Renault	Renault	Private sector	
Daher	Daher	Private sector	
Association des DRH de LA ZONE FRANCHE	ADRHZF	Private sector	Association of HRD in the free zone
Association Marocaine pour l'Industrie et le Commerce de l'Automobile- Maroc	AMICA	Private sector	Moroccan Association for Automotive Industry and Trade
Association des Femmes Chefs d'Entreprises du Maroc	AFEM	Private sector	Association of Women Entrepreneurs of Morocco
Association des Gestionnaires et Formateurs des Ressources Humaines (nord)	AGEF	Private sector	Association of Human Resources Managers and Trainers (North)
L'Agence Spciale Tanger Mditerrane	TMSA	Private sector	The Special Agency Tangier Mediterranean
SEBN Maroc	SEBN	Private sector	
GMD Metal	GMDM	Private sector	
Association des Gestionnaires et Formateurs des RH de la Zone Franche (nord)	AGFRHZF	Private sector	Association of HR Managers and Trainers of the Free Zone (North)
Hôtel Farah	Hotel F	Private sector	

Association des Etudiants en Sciences Economiques et Commerciales	AIESEC	Youth	Association of Students in Economic and Commercial Sciences
Club ENACTUS	ENACTUS	Youth	
Jeunes des centres de formation professionnelle OFPPT	JOFPPT	Youth	Youth in vocational training centers OFPPT
Association des Parents (enseignement publique)	Parent Assoc	Youth	Association of Parents (Public Education)
Etudiante	Student	Youth	Student
BDE FST	Student Off 1	Youth	Student office
BDE ENSAT	Student Off 2	Youth	Student office
BDE ENCGT	Student Off 3	Youth	Student office
INJAZ Al-Maghrib	IAM	Civil society	
Association Solidarité Marocaine pour L'emploi	SME	Civil society	Moroccan Association of Solidarity for Employment
Centre des Jeunes Dirigeants d'Entreprises	CJD	Civil society	Centre for Young Business Leaders
Centre Marocain pour l'Innovation et l'Entrepreneuriat Social	MCISE	Civil society	Moroccan Center for Innovation and Social Entrepreneurship
Tamkeen Maroc	Tamkeen	Civil society	
Jeune Chambre Internationale Tanger-Mtropole	JCI	Civil society	Junior International Chamber Tangier
Association esprit des jeunes	AEJ	Civil society	Youth Spirit Association
Fondation Mohamed VI pour la réinsertion des détenues	FMS	Civil society	Mohamed VI Foundation for the Rehabilitation of Inmates
Association 100% maman	MA	Civil society	100% Mom Association
Casal Dels Enfants	CDE	Civil society	
PONT RH	PONT RH	Recruitment agencies	
Horizon RH	Horizon RH	Recruitment agencies	
Select	Select	Recruitment agencies	
Solutions Intégrales	SI	Recruitment agencies	
RH CPMA	RH CPMA	Recruitment agencies	
OBI Conseil	OBI	Recruitment agencies	
Raiss Consulting	RS	Recruitment agencies	
Focus Consulting	FC	Recruitment agencies	
Acetre Consulting	AC	Recruitment agencies	
PCM	PCM	Recruitment agencies	
Centre Régional d'Investissement Délégation de Commerce	Inv. Ctr. Com. Del.	Public sector	Regional Investment Centre Delegation of Commerce
DRFP	DRFP	Public sector	Direction Régionale de la Formation Professionnelle Regional Directorate of Vocational Training
Agence pour la promotion et le Développement du Nord	Dev. Ag.	Public sector	Agency for the Promotion and Development of the North
Conseil régional	Reg. Coun.	Public sector	regional Council
Conseil communal de Tanger	Commune	Public sector	City Council of Tangier
Présidence du gouvernement	pres Gov	Public sector	Presidency of the Government
Académie de l'éducation nationale	Edu Aca.	Public sector	Academy of National Education
Agence nationale pour la promotion de l'emploi et des compétences	ANAPEC	Public sector	National Agency for the Promotion of Employment and Skills
Agence Nationale pour la Promotion des Petites et Moyennes Entreprises	ANPME	Public sector	National Agency for the Promotion of Small and Medium Enterprises
La Wilaya de Tanger	State	Public sector	Prefecture of tangier
Université Abdelmalek Essaadi	UAE	Universities	University Abdelmalek Essaadi

Ecole Nationale des Sciences Appliquées de Tanger (ENSA Tanger)	ENSA	Universities	National School of Applied Sciences of Tangier
Faculté des Sciences et Techniques de Tanger	FST	Universities	Faculty of Science and Technology of Tangier-
Ecole Nationale de Commerce et de Gestion de Tanger	ENCG	Universities	National School of Commerce and Management of Tangier
Professeur (ENSA Tanger)	Prof ENSA Tan	Universities	Professor (ENSA Tanger)
Professeur (ENCG)	Prof ENCG	Universities	
Professeur (FST)	Prof FST	Universities	
Professeur (ENSA Tétouan)	Prof ENSA Tet	Universities	
Professeur (FP Tetouan)	Prof Tet	Universities	
Institut Supérieur International de Tourisme de Tanger	ISITT	Universities	International Institute of Tourism in Tangier
Professeur ISITT	Prof ISITT	Universities	
Office de la Formation Professionnelle et de la Promotion du Travail	OFPPPT	Vocational schools	Office of Professional Training and Promotion of Work
Institut Spécialisé de Technologie Appliquée et de Nouvelles Technologies d'Information et de Communication- ISTA NTIC	ISTA NTIC	Vocational schools	Institute of Applied Technology and New Information and Communication Technologies - ISTA NTIC
Complexe de formation professionnelle industrielle et logistique	Complex training	Vocational schools	Industrial and Logistics Training Complex
Centre Mixte de Formation Professionnelle de Tanger	Training center	Vocational schools	Mixed Training Center of Tangier
Institut Spécialisé de Technologie Appliquée - ISTA Ibn Marhal	ISTA-ibn Marhal	Vocational schools	Institute of Applied Technology - ISTA Ibn Marhal
Formateur ISTA TANGER FREE ZONE	Trainer ISTA Tan	Vocational schools	Trainer at ISTA TANGER FREE ZONE
Formateur ISTA IBN MARHAL	Trainer ISTA Ibn Marhal	Vocational schools	
Formateur ISMO NTIC TANGER	Trainer ISMO	Vocational schools	
Education for Employment Morocco	EFE	Funders	
Coopération Allemande	GIZ	Funders	German Cooperation
Chambre Espagnole de commerce	Chamber com. es	Funders	Spanish Chamber of Commerce
International Youth Foundation	IYF	Funders	
USAID	USAID	Funders	
Fhi360	Fhi360	Funders	
Banque Populaire	Bank P	Funders	