Qualification offer in EGOV competencies in PALOP-TL

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ABSTRACT

Information and Communications Technologies (ICT) have been successfully used in order to promote and pursue the goals of UN's 2030 Agenda for Sustainable Development. Meeting these goals, however, require significant efforts on public policy development, adequate planning and implementation, as well as qualified human resources working at every level of government, public administration and institutions. This paper presents a first quantitative analysis originated from Electronic Government-related training sessions that took place on all five Portuguese Speaking African Countries, and in Timor-Leste along 2017. The results focus on (*i*) the availability of higher education institutions offering courses related to EGOV on each of those countries; (*ii*) the qualification of the professionals attending those sessions; and (*iii*) how availability of local higher education courses translates into qualifications of local professionals serving at public administration level. This paper also discusses some perceptions gathered from the field, both from participants and lecturer teams, framing additional challenges that EGOV-related courses must take into account in those particular settings. It concludes by pointing out some of the works already taking place, which provides a deeper understanding of the workforce competencies in EGOV for each of those countries.

KEYWORDS

EGOV, education offering, PALOP-TL

1 INTRODUCTION

During a United Nations Summit held in September 2015, all member states have agreed with the 2030 Agenda for Sustainable Development [6], which introduces 17 *Sustainable Development Goals (SDG)* to be achieved in the upcoming years in order to create conditions for sustainable, inclusive and sustained economic growth, shared prosperity and decent work for all people. A careful analysis of these goals reveals that some of them represent challenges for national governments, requiring enhancements in quality, efficiency and comprehensiveness of services provided to their citizens.

An approach being widely adopted by many countries worldwide toward these goals consists in resorting to *Information and Communications Technologies (ICT)* for deep integration, interoperability and effective information sharing, under a broad concept of *electronic government (EGOV)*. In fact, this has been a society demand, which leverage the power of technology for socio-economic development and other purposes [3]. Into the public administration

domain, it might represent an increased efficiency in service delivery and improved synergies across government agencies. Moreover, research have demonstrated the developmental potential associated to ICTs on developing countries as a rationale for implementing different electronic government solutions [2].

Considering specifically the SGD scope, achieving some goals might be triggered by a well-designed EGOV approach, namely: (*Goal 8*) promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; (*Goal 9*) build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; (*Goal 10*) reduce inequality within and among countries; and (*Goal 11*) make cities and human settlements inclusive, safe, resilient and sustainable.

Although the implementation of EGOV solutions can provide many benefits, including improved public services, administration efficiency, reduced corruption and enhanced engagement with citizens [1], according to the United Nations, progress in developing electronic government has been unequal in different regions. This is more noticeable in African countries, in which 30% of the continent countries are at the bottom 10% of the world ranking [5].

Difficulties in enhancing socio-economic development through ICT are commonly related to the digital divide caused by inadequate infrastructure, high cost of access, inappropriate policy regimes, network telecommunication provision inefficiency, language divides and lack of locally created content [4]. However, considering that ICT demands workforce with appropriate skills and knowledge, investing in local human capital represents a crucial approach to address these gaps.

In this way, amongst several international efforts aiming to enhance EGOV adoption in developing countries, some of them have been allocating resources toward fostering related competencies of local personnel. An example is the Supporting Project to the Improvement of the Quality and Proximity of Public Services (PASP) in the five Portuguese Speaking African Countries and Timor-Leste (PALOP-TL)[1], namely Angola, Cabo Verde, Guinea Bissau, Mozambique, Sao Tome and Principe, and Timor-Leste[2].

The main objective of this project consists in supporting the development of better and more accessible public services by enhancing the way public management operates in national and local levels. It involves contributing with the modernisation of PALOP-TL public administration through the promotion of ICT solutions.

Into such scope, a component of technical training aims at fostering local competencies through a two weeks programme[3] in each country tutored by senior professors from University of Minho,

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[1]For further information: http://www.pasp-paloptl.org/en
[2]In this research, the country names follow the official United Nations Member States nomenclature available at www.un.org/en/member-states/
[3]The covered subjects are: (i) EGOV strategic planning; (ii) Project management; (iii) Information security; and (iv) Open data, big data and data analytics.

Portugal. These actions, which took place between March and July of 2017, were addressed to local public agents involved in developing and deploying EGOV solutions in diverse levels of public administration.

In this context, the present research work provides a comprehensive overview on the available educational offer in the area of EGOV provided by higher education institutions in PALOP-TL. Resorting to public and locally surveyed information, this original report summarizes the qualification options for those involved in the public administration modernization as well as the quantitative differences among the countries and their underlying workforce profile.

This paper is organized as follows: the survey methodology is described in Section 2; quantitative results and comparisons are presented in Section 3; conclusion remarks and early recommendations are summarized in Section 4.

2 METHODOLOGY

Aiming to describe the higher education offerings in EGOV within PALOP-TL, two main methodological elements were used. The first one consists in identifying all higher education institutions in each country from underlying ministry of education, national directories web sites and related scientific publications. This is followed by a comprehensive survey in order to identify the existence of specific or related programmes in electronic government field.

The second methodological element relies on a survey conducted by the lecturer team during local training actions under PASP scope. The survey consists in applying a questionnaire to all public agents with EGOV related duties who have attended, at least, one of the week sessions. The questions aim at revealing the formal educational background of these professionals as well as their opinion regarding local qualification opportunities and developed competencies through offered programmes, mainly for those who have completed their qualification in such country. For the purpose of this study, the surveyed information is listed in Table 1, in which the items identified as "Q" are questions regarding the educational profile and items identified as "S" are statements evaluated between *1 - completely disagree* and *5 - completely agree*.

Table 1: Surveyed information on local EGOV qualification.

Item	Description
Q	Which is your highest education level?
Q	In which country did you complete the highest education level?
S	There are specific educational offerings in the area of EGOV.
S	During my academic programme I attended specific subjects in the area of EGOV.
S	During my academic programme I attended indirect subjects in the area of EGOV.
S	My academic education has provided skills for acting in the area of EGOV.

Figure 1 presents the number of professionals surveyed in each country along the two weeks training action. It is important to

highlight that training participants were selected locally by the personnel serving in key positions at national public institutions. Yet, general selection guidelines have considered professionals already engaged, or set to engage in EGOV policy development or implementation.
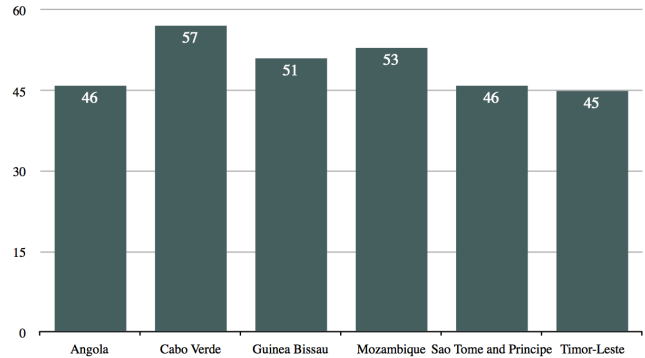

Figure 1: Number of surveyed professionals per country.

3 ONGOING RESULTS

The on-line stage[4] of surveying has revealed a total of 73 higher education institutions operating across the six countries. Most of them were identified through reports published by local researchers instead from official government portals. As presented in Figure 2, the countries with more institutions in operation are Mozambique (*i.e.*, 28 institutions) and Angola (*i.e.*, 18 institutions). They are also the countries with highest territorial extension and population in this group. In this regards, Cabo Verde draws attention with the highest relative number of 1 institution for every 55 thousand residents.

Following a global trend, none of the educational establishments identified in these countries provides qualification programmes entirely oriented to EGOV. Hereupon, Figure 3 presents the number of related programmes available in each country. Again, Angola and Mozambique concentrate the highest number of offerings (*i.e.*, 23 and 36 programmes, respectively).

Regarding the qualification area in which these programmes are inserted in, the majority of offered courses are in the field of Informatics (*i.e.*, 62%) and Public Administration (*i.e.*, 20%). Excepting Sao Tome and Principe[5], all countries provide, at least, one programme in each area. Taking into consideration their qualification level, most of them consist in undergraduate programmes (*i.e.*, 70%).

Considering that most of surveyed institutions do not provide detailed information on offered courses in their websites, as discussed in Section 2, part of a comprehensive questionnaire proposed to local public agents developing or deploying EGOV solutions was used in order to enlighten each country scenario.

Figure 3(a) shows a similar distribution of highest formal qualification across all countries, in which the surveyed professionals have mainly completed graduation degree. Further analysing the portion of those who have completed their qualification in national

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[4]Conducted between March and September of 2017.
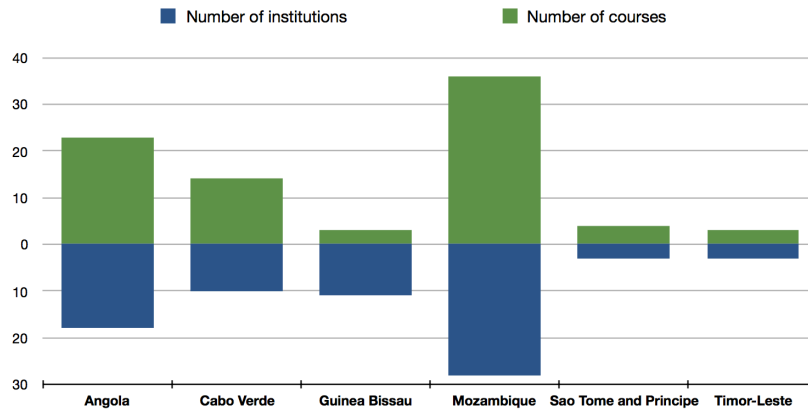[5]Only courses in the field of informatics were surveyed during the research period.

Figure 2: Panorama of higher education institutions.

institutions reveals a more heterogeneous distribution (see Figure 3(b)). In this regard, it is possible to identify that countries with highest number of universities and programmes are also those with highest number of professionals with local education. However, a small number of institutions or programmes do not necessarily imply in a smaller number of workers locally qualified, as observed for Timor-Leste in Figures 2 and 3(b). These figures also exhibit that even providing a relative large number of programmes, less than 25% of the local workforce in Guinea Bissau has completed its qualification in a national institution.

Evolving the analysis through the professional perspective assessed according descriptions in Section 2, following subsections highlight exclusively the outcomes from those attending PASP trainings who have local qualification.

3.1 Angola

According to 55% of the locally qualified professionals, Angola does have educational offers in EGOV competencies. From the total of 27 considered attendees 18% have attended specific courses in their respective academic programmes, while 30% have attended courses indirectly related to EGOV. The same number believe they have acquired the skills required in related activities.

3.2 Cabo Verde

Similarly to the observed in Angola, from the total of 18 professionals graduated in Cabo Verde, around 61% consider the country offers formal education in the field of EGOV. Moreover, during their qualification programmes 16% have attended specific courses and 39% have attended courses indirectly related to electronic government. The number of attendees who consider to have acquired skills into the underlying programme scope comprehends 33%.

3.3 Guinea Bissau

Despite not being the country with the lowest number of related programmes (see Figure 2), all the 10 professionals qualified in Guinea-Bissau claim there is no formal qualification options in the country. Controversially, 40% and 60% of them declared that they have attended specific or related courses, respectively, during their local qualification programmes. In addition, all of them claim to have acquired related competencies on the same scope. Such incoherence might indicate a misunderstanding regarding electronic government concepts and its underlying activities.

3.4 Mozambique

Notwithstanding being the country with the highest number of both, institutions and related programmes, most of the PASP attendees graduated in Mozambique (*i.e.*, 71%) do not consider there is local offerings in the field of EGOV. However, 42% have attended courses directly or indirectly related with the area. In this sample, around 58% believe they have developed required skills during their academic qualification.

3.5 Sao Tome and Principe

Taking into account that only 8 of the training participants have concluded their qualifications in one of the three local institutions, most of them (*i.e.*, 65%) believe the country provides formal qualification in electronic government. However, just 1 of them has attended specific courses and 3 have attend courses related to EGOV in their qualification. Although with a low number of related subjects, 62% of the participants believe they have acquired the competencies necessary to perform EGOV related functions.

3.6 Timor-Leste

As observed in Sao Tome and Principe, despite the small number of local institutions and courses, most timorese attending PASP trainings (*i.e.*, 60%) agrees that there is local qualification offering in EGOV. Moreover, from the 20 of those who have received their highest qualification in Timor-Leste, 45% have attended specific courses in this area, while 40% had only indirect contact with the subject. Regarding the competencies required in this area, 55% of the professionals believe their local graduation has provided the necessary skills.

4 DISCUSSION AND CONCLUSIONS

Based on the importance of human resources in developing reliable and well-designed ICT solutions into the public administration
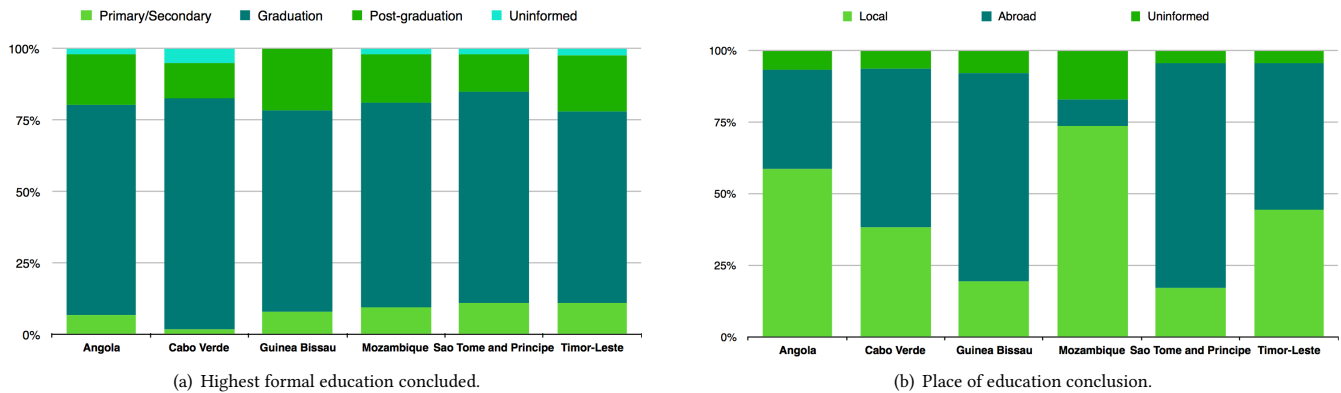
(a) Highest formal education concluded.

(b) Place of education conclusion.

Figure 3: Qualification profile of EGOV professionals.

domain in order to accomplish the *United Nations Sustainable Development Goals*, this work provides a first quantitative overview regarding the current offers of EGOV related high education across the five Portuguese Speaking African Countries and Timor-Leste.

Understanding local qualification opportunities might support policies aiming at fostering national competencies in the area of EGOV, also leveraging socio-economic development and international competitiveness. In this way, results presented in the previous section seem to indicate a positive correlation between the number of local higher education offerings on EGOV related courses, and the number of professionals who obtained a graduation degree in local institutions. Only Timor-Leste seems to depart away from this correlation. One possible explanation is that, in spite of the meagre number of courses, a lot of effort on human resource qualification was put in place since restoration of its independence, in 2002. Furthermore, Timor-Leste inherited a significant base of civil servants, that completed their qualification under Indonesian annexation, and may have be expressed in an ambiguous way by the professionals that attended the training sessions. These results will certainly be subject to further scrutiny and clarification in this ongoing research project.

Another remarkable finding in this research work is the systematic lack of official information in most of high education institutions regarding their offerings, which might hampers clear choices for those interested in this area. In addition, even despite the majority of professionals attending the training actions informed that they have completed a related graduation, the general understanding of EGOV basic concepts and policies vary significantly among participants and countries.

From the field experience, it was also possible to observe that professionals attending the training sessions seemed to lack knowledge or were disengaged from higher-level policies that may have been set in their institution or government. Also, in several occasions, the participants pointed out that higher-level managers were not aware of the challenges they are facing on a daily basis, both on the matter of logistics to successfully carry out their roles, as well as lack of expertise on some of the technologies they had to deal with or implement.

These results must be seen as the first take on a quantitative and qualitative overview of EGOV qualification offerings in PALOP-TL from a more comprehensive survey already conducted during the training sessions under PASP's scope. Based on that, future work will address (*i*) gender and age distribution; (*ii*) relation between qualification and professional activities performed in each institution; (*iii*) perception of strengths and weaknesses of local institutions and/or government's policies regarding EGOV; (*iv*) lecturer team's perceptions regarding local qualification reality; and (*v*) an in-depth overview of EGOV related capacitation and actual public service delivery.

ACKNOWLEDGEMENTS

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