

The Use of Assistive Technology to Empower the Deaf & Hard Of Hearing for Entrepreneurship & Self-Employment in Egypt

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ABSTRACT: In Egypt, DHH face many barriers in the workplace. The problems include communication difficulties and lack of equity with normal people. Entrepreneurship & self-employment could be a good alternative to overcome the above-mentioned problems.

The proposed framework for Egypt to empower DHH for Entrepreneurship & self-employment include improving the education. Developing and increasing the number of their special and inclusive schools is one aspect. Enforcement of district education could be a parent reality rather than a dream. Supplying the schools with qualified teachers and the necessary AT is another aspect. The necessary AT is the method for establishing communication in education as well the business.

Finding the necessary resources to start the business is another step. Financial resources are needed; as well the support of the society in any available means.

Vocational Rehabilitation (VR) is mandatory for empowering DHH for their future business. Audiologist and VR counselors should visit their workplace and accordingly VR courses can be established.

The last step is legislation and enforcement of the necessary laws to give DHH their rights.

Further research is needed about the various aspect of DHH difficulties in work and how to overcome them; including changing the way our community looks at DHH. In this aspect, Media can play an important role.

KEYWORDS: Disability, deaf, hard of hearing, deaf self-employment, deaf entrepreneurship

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ABBREVIATIONS

AT: assistive technology

ALD's: assistive listening devices

DHH: deaf and hard of hearing

NGO's: non-governmental organizations

PwD: people with disabilities

VR: vocational rehabilitation

I. AN OVERVIEW

One of the most incapacitating disabilities is the hearing impairment. Whether congenital or acquired, both are usually not taking a suitable chance in the workforce. The deaf and hard of hearing (DHH) are usually not seen, discriminated, ignored and excluded from basic education, workforce, opportunities and development. Generations of DHH grew up learning that their career options were limited. The prevailing view of DHH is that they are only suitable for specific types of employments (e.g. photography, sculpture, video editing or other hand skills). The result was under employment or even unemployment. Promoting empowerment of DHH for Entrepreneurship & self-employment is mandatory to overcome the employment barriers that DHH suffer. Such empowerment itself is facing many problems; starting from difficulties in education, passing through the lack of assistive technology (AT) and ending with the scarcity of the necessary financial support (pressman, 1999).

As any other normal person, many of the DHH can be entrepreneurs, but only waiting for that chance to be explored. The integration of AT into their life is the key to their success. The Egyptian law states that "in governmental and nongovernmental sectors, people with disabilities (PwD) must be 5%". Out of the 5%, DHH is the disability that has the lowest hiring rate, due to difficulties in communication in the workplace. The lack of hearing AT needed by DHH themselves to establish such a communication is a major obstacle (Jennings & Shaw, 2008).

The main objective of this article is to identify the necessary steps needed to be done by the community (governmental and non-governmental); as well the DHH themselves; to start their own business at the level of Entrepreneurship & self-employment.

An overlook of the DHH community in regards of education and employment:

A deaf person can communicate through visual orientation; through the eyes (reading messages, reading lips, observing gestures and clues or more commonly use sign language). Some of the DHH can receive communication through the ear with different AT. The first concern of DHH parents is how to communicate with their children; either visual or through the ears. Most of the Egyptian DHH find difficulties in reading or writing Arabic or English language. Therefore, the common method of communication between the DHH in Egypt is the Arabic Sign Language (ArSL) which is not understood by normal people. This fact has a great effect on the social life of the Egyptian DHH community that leads to isolation and many difficulties in assuring sufficient education, socialization and career opportunities. Many parents find difficulty in learning ArSL, as well many difficulties in finding the appropriate teachers for their DHH children to teach them ArSL. Here comes the second concern of the DHH parents; finding a school for their children. In USA the public law 94-142 (the education of all handicapped children Act of 1975) declared that deaf children are entitled to an education in their local school district. That law resulted in enrolling of the American deaf children into mainstream schools (inclusion) rather than the traditional deaf school which increases the isolation of DHH environment. In Egypt, there has been a shift in the governmental concern towards inclusion but still the traditional DHH school is the main stream in teaching DHH with “unfortunately” below the average level of education. Though the government provides bilingual education in different educational settings using ArSL, still the level of education is completely unsatisfactory. In Egypt, there are 113 Deaf Schools using oral and sign Language (Total Communication). Deaf people’s access to university education and sign language interpreting services at the university is none, because of the low quality of primary, preparatory and secondary education. Deaf students graduate illiterate, even though they spend 14 years in Deaf schools. Some hard of hearing students manage to enroll in public schools, and upon graduation from public schools they enroll into a university but still with no sign language interpreting service or the needed AT (Elgayyaret *al*, 2015) (Mowry,1994).

The concept that should be realized by everyone working on the disability community (especially the DHH) is that the cultural and educational development is mandatory for developing optimum career opportunities among the DHH population. Recognizing the self-abilities and ambitions along with the resources and limitations is essential in career creation including self-employment, SMEs and entrepreneurship (Parsons, 1990).

Proper education will increase the ability of DHH to communicate better in their own workplace and this will add leisure to their work and according to McDaniels and Gysbers (1992), the formulation of career equals work plus leisure.

For mankind, employment is the main act for meeting the necessary needs for sustaining life with particular standards for living. Over the past 30 years PwD have been affected by the global changes that have been going on. Fixed term employment is gradually replacing lifetime employment. Jobs in the field of information technology (IT) as well the field of service jobs are gradually replacing manufacturing and agriculture jobs. The big fact of PwD never having equal socioeconomic parity and equality with normal individuals is a striking but rather not a surprising fact. Unfortunately, such type of change that happened in employment globally did not come in favor of DHH workers. The increased demand for workers in the field of service, IT and sales came in favor of the general population rather than the DHH population with no need to emphasize the importance of communication skills in such businesses. As a natural result, the discrepancy between the DHH and the general population concerning the annual earnings has been worsening over the last three decades (Schein, 1989 & Newman *et al*, 2011).

Unfortunately, in Egypt; there are no available statistics about the types or sectors of DHH work. But we have laws that apparently support PwD. The main legislation is the law no. 39 for the year 1979. It offered definition of the disability and stated their rights including the right of healthcare and rehabilitation (including VR). Also, the law stated that the right to work is to be enforced. That law increased disability job representation in the firms from 2% to 5%. Also in the year 1996, law no.12 (articles 76 & 77) stated that children with disability must have the right to full access to social and health care including the psychological welfare to increase their self-dependence in order to ease their social life and to help the DHH and their families to overcome the obstacles in their daily routine in the form of the necessary rehabilitation such as vocational, medical and educational services. Though it is generally perceived that DHH in Egypt are suffering difficult time achieving economic gains as they have no suitable education as well technical and professional managers find that DHH employees are relatively not suitable in upward mobility concerning managerial positions. A major conclusion arises that supervisors perceive the DHH employee as having limited abilities. We don’t have any statistics about promoting DHH workers in different jobs. But we can hold to USA as an example; 1% of the disabled workers (including the DHH) were promoted. Compared to 15% of the general work force that were promoted (Equal Employment Opportunity Commission Report, 1995).

Classification of available hearing AT:

AT is used by DHH to overcome the obstacles they face in their workplace. According to Stephen *et al* (2010) and Valente (2006), hearing AT is generally divided into three categories:

1. **Assistive listening Devices (ALD's):** Hearing aids are the conventional method for the amplification of sound. Many ALDs can be connected directly to the hearing aids to improve the communication of the DHH in the workplace. One example is the amplifying telephone sets that are compatible with hearing aids. Another example is the Bluetooth loop set that can stream sounds from different appliances (e.g. smart phone, microphone adaptor, monitor adaptor or even a wired connection) directly into the hearing aids or the processor of the cochlear implant. A third example is the FM listening device which provides clear sound projected directly to the hearing aid in a high volume even in noisy environment. The FM system can be held in hand, worn around the neck or placed next to the speaker (e.g. a teacher in the class, a manager in the workplace or even on the table of a conference room).

2. **Text based technology:** This technology is for those DHH in which amplification of sound is not enough to provide suitable communication and access in the workplace. The famous example of the text-based technology is the smart phone which provides access to the email and the instant messenger; allowing those DHH to communicate with their managers and other employees. A second but similar example is the laptop. A new technology in text-based technology is the telephone captioning that transforms the sounds and the words in a conversation over the phone into text written over the screen attached to the phone and vice versa. The most recent in text-based technology is live remote captioning. It is increasingly used in the workplace in USA and Canada (unfortunately not in Egypt) to assist DHH access conferences, training courses and meetings. It requires both a laptop and a high-speed internet to allow captioning on the screen which can be transmitted to a projector and the projector allows the use of a large screen.

3. **Web based video-conferencing technology:** This technology is used by those DHH who know the ASL (unfortunately not ArSL) and can be used over Skype, OVOO or facetime. And it also requires a laptop or mobile phone and a high-speed connection.

The use of AT depends on the audiologist and the occupational therapist. The hearing assessment by the audiologist determine the degree of the hearing impairment. This is followed by fitting of the appropriate hearing aid and choice of the suitable ALD's. The audiologist and occupational therapist should be trained to assess the demands of DHH in their workplace and other environments (Jennings MB & Shaw L, 2008).

A survey (RESNA Catalyst project, 2010) was conducted about those who bought AT to help them in either their employment place or self-employment. The results of the survey showed that:

- 93% improvement in productivity
- 87% increased job satisfaction
- 86% improved performance
- 67% increased work hours
- 77% increased ability for promotion
- 77% increased earnings

Entrepreneurship & Self-employment activity of the DHH:

If we have a look at many of the theories that deal with the entrepreneurship and small business ownership, there is no room for disability; especially the hearing disability. The business startup process is a complicated interaction between the entrepreneur, the chances, the surrounding environment and the previous experience (Bouchikhi, 1993).

DHH wanting to have their own source of income may consider starting and developing their own business. But they have to overcome the previously mentioned barriers which mirror the barriers that any DHH face in ordinary workplace (Arnold & Ipsin, 2005).

An added challenge will be the lack of confidence; either in starting or expanding the business. There is also the deficiency of the needed capital resources. Coleman (2007) stated that the needed capital resources for starting a business are human, social and financial resources.

In a report conducted by UN (2014) about jobs and skills for PwD in Egypt, many factors were considered to help PwD in self-employment. The report spoke about providing the needed assessment to build the capacity to conduct a business. Also, the report stated that enabling NGO's to help PwD is mandatory. The help should be in the form of training providers and counselors; either financial or employment service providers. The report also stated that increasing the awareness about the benefits of promoting self-employment and SMEs for PwD will solve many of their conflicts. The report included an important part about empowering PwD with ICT skills and E-learning methods. It ended with encouraging social innovations and fostering any type of innovation that may help the needs of PwD. Unfortunately, no comprehensive work was carried out to

study the above-mentioned data and relate them the DHH in specific. In Egypt, the research is needed to increase our knowledge about DHH entrepreneurs and to use their experience and challenge process to gain more DHH entrepreneurs.

Worldwide, there is a unique conceptual framework about self-employment for disabled people. The one which was proposed by Yamamoto & Alverson (2013). The conceptual framework is composed of three inter-related independent variables affecting the dependent variable; the disabled self-employment. The first independent variable was the individual characteristics which is further divided into gender, ethnicity, education attainment and significant disability. The second was the accountability systems which was further affected by cost of VR services, hours worked and weekly earnings. The third was the level of support which explained the support to be the number of VR services, medical support and public support (figure 1)

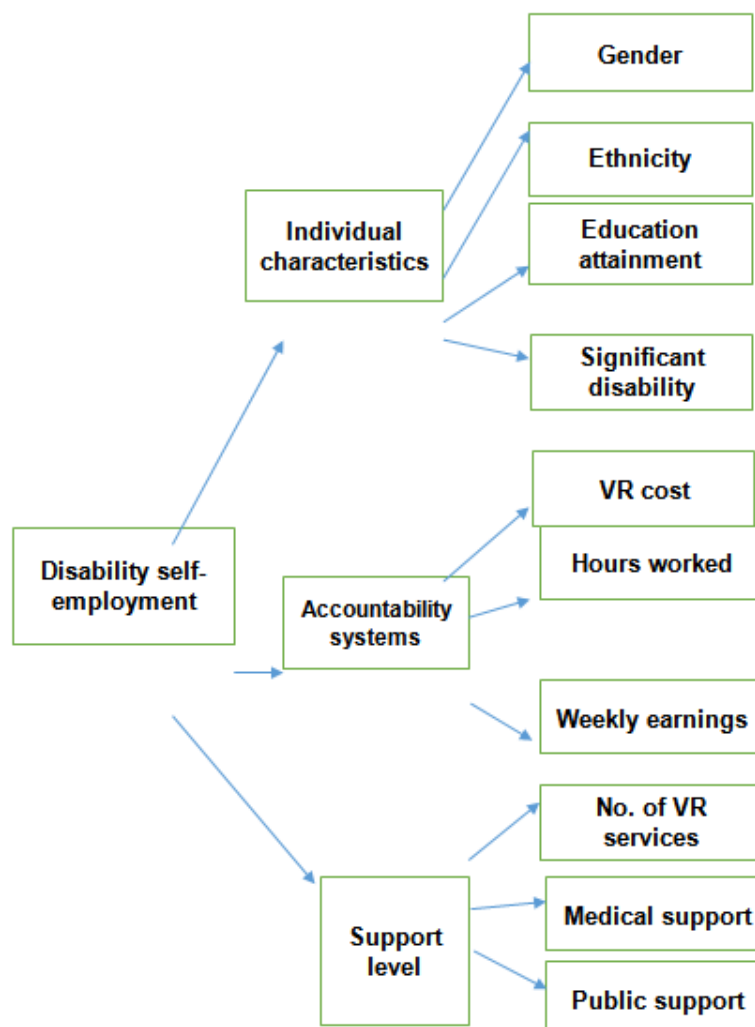


Figure (1): Yamamoto & Alverson conceptual model of VR self-employment success for clients with disability

There has been reports in the literature about the importance of the support provided by family members (especially the father) in taking decisive role in career planning for the deaf person. On the contrary, other reports state that excessive family and social support may lead to a less profitable business and subsequently a higher rate of failure. On the other hand, there are two methods of business incubation; the formal business incubator and the natural incubator. The formal business incubator is represented by the community, state or governmental support. It comes in the form of economic and development projects. This type of incubation offers the essential space, assistance and support services (in the form of shared offices, computers, business plans and financing). The natural business incubator comes from the special community surrounding the DHH in the form his family, neighbors, friends and mentors (Greene & Butler, 1996).

In Egypt, the first type of incubation is almost completely missing from the side of the government and inadequately represented by NGO's. The second type of incubation is somehow available in Egypt but completely inefficient. Given the fact that communication between DHH and the rest of the community is a big

challenge, it is naturally perceived that any DHH to start self-employment or small business will need many special equipment and services. The impact of these special needs on the capital requirements of DHH to start their business needs to be investigated and analyzed. Augmenting both types of incubation needs to be discussed in detail. Also, we don't have any data on how often audiologists or VR counselors visit their DHH patients in their workplace or even if we have occupational therapists for DHH workers. It is clear that not giving the disabled people (including DHH) their rights is considered a sort of discrimination. Anyhow, the government works with UN agencies, international aid donors and other NGO's to design programs for job training for the disabled. Also, the government is raising the public awareness of the abilities and the importance of promoting disability employment and self-employment. This includes all kinds of media as TV programs, newspapers and journals, other print media and changing some of the educational material in public schools (A UN report, 2014).

II. DISCUSSION

To answer the question about how to empower DHH for Entrepreneurship & self-employment we should answer a simple question; is it a viable option for DHH?! Surprisingly, according to Griffin & Hammis (2008) the rate of self-employment among PwD since the late 1980s has been increasing. They stated that self-employment rate in PwD is 11.1% compared to 6.2% in people without disability.

Education is the first aspect to be considered (Yamamoto & Alverson, 2015). The level of education that DHH receive in Egypt is questionable. This is the first challenge met by a DHH parent. The level of education of DHH in Egypt needs improvement. Parents tend to send their children to mainstream schools rather than special education schools. In the mainstream school the teachers are not qualified to deal with a DHH child. They lack the necessary AT to establish communication with those children. The mainstream schools can be public or private. In the private schools, more attention can be directed to a DHH child. But, in public schools they usually don't accept DHH from the very beginning. Parents (if not having the financial capability) will be obliged to send their children to the special education schools. The number of special education schools is not enough to take the big number of DHH in Egypt. These schools are designed to deal with the Deaf in ArSL and not with the Hard of Hearing. The proposed solutions are:

- increasing the number of special education schools.
 - Increasing their capabilities and capacities.
 - District education of DHH should be considered with empowerment of mainstream schools with the necessary AT and teachers.
 - Dividing DHH children into year groups (e.g. 5-8 years & 9-12) rather than the ordinary school years to meet the necessitating deficiencies of different subjects.
- The main limitation to the above suggestions will be the education budget. Nevertheless, we can make use of the increased community awareness that showed a remarkable rise in the past few years.

About the challenges met in starting and managing the business and penetrating the market, it is clearly that the big challenge is not only financial. Many of the DHH start their own business with minimal or even no money at all. Even if they need a financial support, many of the NGO's can support them. Support also can be provided by any family member or caregiver. The real challenge is how to deal with the various aspects of business. Communication can be partly solved by AT. Marketing, advertising and deciding plans for future are major challenging situations that DHH meet in the phase of maintaining their business. The support from their family, community, government and NGO's is expected to aid DHH in starting and sustaining their business. It is clear that support should be financial, physical, psychological and technological in the form of the necessary AT. In the current situation, the role of the government might be limited due to the financial crisis that Egypt is facing nowadays. Another question is about the communication method in business. Apart from common gestures and basic ArSL, this is a big problem in Egypt. Here comes the big answer of the recent AT. We reviewed the various types of AT that can be used for DHH to communicate with their employees, customers and authorities. The scarcity of foreign currency resources and the availability of qualified personnel that can deal and maintain the newly available AT are the main obstacles.

DHH community itself is to be considered. Is there DHH entrepreneurs to train and mentor other DHH for self-employment and SMEs?! Here comes the role of VR. VR should not include audiologist and VR counselors alone. It should include other DHH entrepreneurs with regular visits for the trainee's place of business starting from day one until the trainee's case is closed. The success rate of VR depends on the demographic characteristics of the trainee; including the age, gender, speech level and level of education. A suitable point for closing the trainees case is the sustainability and profitability of their business for more than one year.

The next concern is about the legislation and enforcement of the rights of PwD (including DHH). We need a law that enforces a barrier free environment in work for all DHH. We need to abandon discrimination in

the workplace and fight abuse of DHH. We need also to offer equity of job opportunities and entrepreneurship between DHH and other people. Legislation concerning integration of DHH into mainstream schools with distribution based on district schools rather than special education schools. It is clear that legislation without enforcement is useless. Also, it is clear that legislation and enforcement is useless until we change the prevailing values and views regarding DHH among the whole community. Ignorance and poverty prevent the early detection and intervention of hearing impairment during childhood. Ignorant people may not only lack the money to buy hearing devices for their DHH children, but also may be shy to make their children wear them. The community also looks at DHH people as inefficient members and such a look should be changed. The new people's council as well the government have sufficient enthusiasm to make such legislation and enforcement under the umbrella of the new constitution. Also, the media is willing to participate in raising the community awareness about the many problems facing PwD (including DHH).

finally, DHH themselves have to believe in their capabilities to overcome the many obstacles they meet in starting their own business. That is an ongoing process that starts with early detection of the hearing impairment and continues throughout their whole life. It is more like a fight that needs the help of the parents, teachers, neighbors, community, NGO's and the government.

III. CONCLUSION AND RECOMMENDATIONS:

In Egypt, DHH have always been working with many obstacles in the workplace; including communication problems, equity with normal people is missing and the chance for development and promotion is almost nil. Entrepreneurship & self-employment could be a good alternative to overcome the above mentioned problems. The proposed framework for empowering DHH for self-employment and SMEs include many levels to work upon. The first was to work on the education plan of the DHH. Improving and increasing the number of their special education schools is another step. Enforcement of district education step. Suppling the schools with qualified teachers and the necessary AT is another aspect. The second step was to equip the starting business with the necessary AT which is mandatory to establish communication with employees, customers and authorities. Finding the necessary resources to start the business is the third step. It is not only financial resources that are needed; it is also the support of the society in any available means. VR is a substantial method for empowering DHH for their future business. This implies qualified personnel (DHH entrepreneurs, audiologist and VR counselors). VR courses can be established and the trainee's case closed after ensuring sustainability and profitability of the business for at least one year. The fourth step is about legislation of the necessary laws to give DHH their rights. Enforcement after legislation is another complementary step. Changing the way our community looks at DHH should be the goal of our government. Media can play an important role in such a plan.

Finally, some recommendations should be taken into consideration:

- Don't let being a DHH become a barrier. You have the right for a career as any person without disability.
- Special attention should be given to DHH females. If we have role models in DHH women, they should be used for counseling to increase DHH female entrepreneurship.
- The higher the education the higher the success rate in the entrepreneurial world.
- A prior work experience is mandatory for any DHH before starting their own business to gain the proper experience before entering the world of self-employment and SMEs.
- DHH should be encouraged to use their voice whenever possible. Don't be shy to use your voice as voice is the main communication method to make yourself heard. Don't be shy to use your voice even if you have difficulty in hearing or listening.
- It is important to have the source of money to start with, but the more important is to have strong interests and skills.
- Any DHH business owner can be considered as an entrepreneur.
- Counselors can hold DHH entrepreneurs as a model for everyone with any sort of disability.

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