

**Do international companies with operations in Costa Rica apply assistive technology tools at the business level to facilitate the inclusion of minorities, specifically for people with physical disabilities?**

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### **Abstract**

**Purpose:** Identify if employees in international companies in Costa Rica, have knowledge of assistive technology provided through their HR department to facilitate the attraction and retention of physically disabled people.

**Objectives:** Identify for the defined group if they are aware of the assistive technologies available and their demographics. Identify if there are policies within their HR departments to use technologies to assist the people with physical disabilities.

**Methodology:** Surveys were used for research as they can easily be sent through modern media to large groups and have a good response rate.

**Findings:** There is almost no knowledge of assistive technological tools to facilitate the inclusion of people with physical disabilities; and mostly human resources employees and those in Director roles or above are the ones with knowledge of this matter.

**Limitations:** Survey with 100 responses due to a time constraint. Further analysis should be done with people with disabilities and within the companies to provide more detailed information on what assistive technologies they use.

**Implications:** This research can help companies pay more attention to the workforce in this community and this will only foster better collaboration that can translate into economic gains and better results overall for the businesses.

**Value:** This research added information on the knowledge of assistive technologies of the employees in Costa Rican international companies.

**Keywords:** Assistive technologies, Physically disabled, Costa Rica

## Introduction

**Context:** There are minorities with physical disabilities: for example, people with vision problems, hearing problems, mobility problems or driving problems. Having these limitations makes it more difficult to get into the workforce. Modern technology provides tools to make it easier for these people to join the workforce.

**Focus of this research:** How international companies in Costa Rica with global resources, provide assistive technology through their human resources departments to facilitate the attraction and retention of physically disabled people.

**Justification:** This topic is important as it is a key factor that all companies should consider based on recommendations from world organizations such as the United Nations and proven to add value to the overall workforce health and economic benefits for the enterprises.

**Background:** Previous researchers have found that during the COVID-19 Pandemic era that the world lived in 2020-2022, the world paradigms around work locations completely shifted. As remote work was utilized, on a much bigger scale across the world, new opportunities were expected for minorities like people with physical disabilities ([Tamers et al., 2020](#)). There is a twofold approach here, where working from home for people with physical disabilities may allow them to be in their safe environment with the necessary adaptations they already have for their daily routines and can remove the transportation barrier. On the other hand, not every disabled person has the right resources or tools to properly work at home. There is the need for the physically disabled people to have the right assistive technology for them to work from home and adaptive facilities and technology at the workplace.

When considering technology, there are opportunities that can support diversity and inclusion to leverage assistive technologies for the people with physical disabilities. Job opportunities can increase thanks to these technologies, which can help bring more security and financial stability for these groups. ([Tamers et al., 2020](#)). Technology is advancing very rapidly in our era, thus creating better opportunities for everyone, with rockets ships going into space and back, and AI automating many processes.

In different countries, the efforts towards assistive technologies for the physically disabled vary based on many factors such as macroeconomics, laws, available technologies, and different enterprise aid programs. Taking the example of Sweden, which is a developed country and one of the most digitalized countries in the world, there are still many challenges for the physically disabled. In 2021 research 36% of the participants reported having a job, which is a lower rate of employment compared to the general population, which was 50%. ([Johansson et al., 2021](#)) Based

on their study, even in a well-developed and digitalized country, people with physical disabilities have a rate of 14% less employment than the regular population.

There are differences in income as well, average income in Sweden in 2021 was 33,000 Swedish crowns (SEK), 54% of people with disabilities had an income of 17,999 SEK or less. ([Johansson, et al., 2021](#)). This indicates the gap in income for people with physical disabilities, and raises another critical situation, where they cannot get equipment or tools to help address their disabilities. They have fewer possibilities to do it on their own.

Disabilities cannot be grouped as a whole, as the facilities, assistive technology, and accommodation for each group are quite different. For example, the tools to help physically disabled i.e., a blind person are quite different from the tools used to help a person with a mental disability. Treating people with disabilities according to their specific situations can help with precision to develop assistive technology required for each subgroup, making it more inclusive. ([Johansson et al., 2021](#)). Even the technology that could be used for this population has to be properly developed for each subgroup and not as a whole.

**What needs to be done to help employees with physical disabilities?** The United Nations Convention on the Rights of Persons with Disabilities has the requirement that social institutions and governments remove any barriers confronting people with disabilities so that they can fully adapt to society without barriers ([Blanck, 2020](#)). This clearly mentions that at the enterprise level, and the UN states the obligation of businesses to remove the barriers for any disabilities that their employees may have. With this comes part of the objective of researching what the companies are really doing to remove those barriers and if they are really known or accessible to their employees.

Within businesses, the human resources department is the one that needs to provide tools, like assistive technologies to help people with disabilities operate in the best possible manner. In human resources, the leaders need to develop and apply adequate practices for people with disabilities, for their companies to be inclusive ([Schloemer-Jarvis et al., 2021](#)). The HR departments cannot work on their own. They need to be supported by their managers and organizational leaders to be able to deliver these toolsets to help these employees. This may also include worldwide initiatives and government help that allow for better available options.

**In Costa Rica, how is this topic addressed?** Study performed in Costa Rica, identifies that the most required assistive devices were spectacles (34%) therapeutic footwear (10%), and cane/sticks, tripod, and quadruped (8%) ([Coto-Solano, 2022](#)). Another important measure is that 41% came from the public sector and 39% were paid out-of-pocket. This means that there is a similar number of assistive devices bought out of pocket as they are provided by the government; and 36% of people could not afford them. Based on this research, there is a problem here. If people

cannot buy the assistive products they need, in Costa Rica, they could face economic problems and complications for employment.

**Hypothesis:** In international companies based in Costa Rica, there would be no knowledge of assistive technologies available for the people with physical disabilities.

Mostly Human Resources employees and Directors or above will be the ones with knowledge of this matter.

**Objectives:** Identify how many people that work for international companies in Costa Rica are aware of assistive technologies they have available.

Identify the demographics of the population with awareness of these technologies in their companies.

Identify if there are policies the businesses have within their human resources departments to use technologies to assist the people with physical disabilities.

**Methodology:** Surveys will be used for research as they can easily be sent through modern media to a large group, and have a good response rate, to get the amount of data needed.

## **Theoretical Framework**

### **Assistive Technology**

Technology helps aid physical disabilities, for example, for the vision impaired, which are 1.3 billion worldwide people as per the World Health Organization, 36 million completely blind and 217 moderate to severe impairment. ([Manjari et al., 2020](#)). Technological assistive devices help these groups; technology like Wearable and Handheld Devices that can assist in object recognition, for example smart glasses, handheld devices such as electronic canes, and many others with sensors that can replace the senses that people with disabilities have some impairment on.

Disabilities must be considered as complex and should not be oversimplified. Analyzing each condition itself (e.g., blindness, deafness, mobility issues) can result in devices that solve the issue for the person. The idea of assistive technology should be driven to overall experiences, for example virtual reality experiences. Integrated disability studies need to occur with more research, to better understand the social model of disability, so they can better use technology and design full experiences to help aid people with disabilities. ([Hofmann et al., 2020](#))

World Health Organization (WHO) and United Nations Children's Fund (UNICEF) state that: "Assistive technology (AT) includes products and services designed to maintain or improve an individual's functionality and independence, enhancing their overall well-being and participation in all areas of society." ([World Health Organization & United Nations Children's Fund, 2022](#)). Many physical aids are part of this category such as wheelchairs, hearing aids and communication devices. With modern technology digital solutions like software and applications to the list can be added to this list. This definition will guide the understanding of assistive technology going forward.

Technology facilitates social inclusion for people with disabilities. the problem is that despite many advancements, there is no cohesive strategy to integrate the solutions. ([Manzoor, 2018](#)). There is the focus on visual disabilities, and more research is required on other disabilities overall and how to use technology in a way that can make the everyday life of this community more seamless. Comprehensive technologies like virtual reality systems help individuals with disabilities to better perform daily activities.

### **Assistive Technology Devices**

Innovative technologies like artificial intelligence of things (AIoT) are key to development of the best possible assistive technologies for the physically disabled. ([de Freitas, et al., 2022](#)) Applications of this technology can be used for visual impairment covering wearable devices, smart systems for navigation, object detection, and communication. These devices connected to

the Internet of Things have endless capacity to detect, describe, analyze objects, and provide feedback to people with disabilities that are using them. Connections to smart devices like smartphones help collect data and improve the overall response of these devices.

Considering social environments, people in the workforce can get discriminated against when seen using aid to assist their disability. ([Piculo dos Santos et al., 2022](#)). Aesthetics plays a significant role in the adoption of assistive technology by the community. Typical devices like the white cane for the visually impaired tend to have more visual impact, in contrast to the smart glasses, which are commonly accepted and used by people with no disabilities as well, which are perceived more positively, overall.

### **Assistive Technologies at a Global and Enterprise Level**

The United Nations Convention on the Rights of Persons with Disabilities mandates the removal of barriers for people with disabilities and the provision of accommodations for this group by employers. ([Blanck, 2020](#)). World organizations oblige enterprises to help aid these communities. By adhering to this, employers will see economic benefits, of the better integration of all their workforces and removing barriers. There must be awareness of all levels, from organizations, to countries, to enterprises on this matter.

Technology needs to be used to reduce barriers such as racism to minorities, for example, people with disabilities; also aging workforce can become disabled. Technologies like automation, robotics, and help in the everyday labor of the workforce, have been beneficial for this community. To foster equity and diversity in the workforce, non-traditional work arrangements are a necessary tool. ([Tamers et al., 2020](#)). These arrangements can be made for the specific need and accommodation of people with disabilities, to make their day to day more inclusive.

Human Resources departments need to foster the inclusion of all workers on their enterprises, been physically disabled one of these. Selection, staffing, training and development, performance appraisal, career management, compensation, and benefits; all need to be tailored and adapted to adhere to all employees to avoid bias towards people with disabilities. ([Schloemer-Jarvis et al., 2021](#)). More research is needed and more robust Human Resources best practices to be able to properly adapt these processes for people with disabilities.

### **Assistive Technologies during COVID-19 Pandemic**

Pandemics like COVID-19 can help shape the new forms and improve technologies, like assistive technologies. ([Smith et al., 2020](#)). The pandemic revealed lack preparedness in Assistive Technology. The positive outcome was that more investigation and development was done in the sector with dedicated technologies. After the Pandemic, more so than before, assistive

technologies, were recognized as essential services, and the need to ensure adequate access to this and other digital technologies worldwide. Not only has technology to be developed, but training is required.

In the Pandemic times, technologies like zoom and other virtual meeting platforms evolved. Even though challenges arose as these systems were not widely designed for accessibility of disabled communities. Remote work created challenges for the community, where people with disabilities did not have the right assistive tools at hand to be able to properly operate remotely. This adds to the financial economic burden of setting up assistive technologies at home. Inequalities were made more evident and the need to make technology universally accessible. ([Bennett et al., 2024](#)).

Part of the positive outcomes from Pandemic, was the emergence of more gig workers in the workforce. These are workers that operate solely on deliverables, and not directly on the office, and it has helped many of the disabled workforce, specially to those who struggle on the traditional employment. ([Harpur et al., 2020](#)) Some of the challenges include financial barriers to getting the necessary equipment on their own to be able to fully operate from their homes adequately.

### **Assistive Technologies at a Country Level**

Several countries have made studies referring to the assistive technology available and their ease of reaching the necessary people. For example, India, Nepal, and Bangladesh, ([Karki, et al., 2023](#)), showed that there is lack of awareness of these technologies within people with disabilities (PWD) and their families. Eligibility and usability are not very widespread and mostly for people with severe disabilities only and in urban areas, which makes it clear that it is not accessible for everyone. In terms of affordability, even with governments aid, is not enough for the demand.

Developed countries like Sweden which is one of the most digitalized countries in the world, are still not taking full advantages of the technology for people with disabilities. Technology appears more difficult for the subgroups with language, cognitive, and intellectual disabilities. On the other hand, groups with ADHD or autism report to be more adapted to assistive technologies ([Johansson et al., 2021](#)). Even though many people have access to assistive technology, the adoption and comprehensiveness of usage is not widespread, marking a clear digital divide between the disability community.

In Thailand, which is a newly industrialized country, there is increasing focus on employment for people with disabilities is growing. ([Cheausuwantavee et al., 2021](#)) There is the need for corporate social responsibility towards people with disabilities, creating roles for individuals in this community. With the help of the government, there are programs to aid the skill gap for this community. Partnerships with the private sector can help create more inclusive workplaces and provide support for employers to accommodate workers with disabilities.

In South Africa, also a developing country, technology is used to develop devices that adapt to the people's disability needs, considering terrains on the region. ([Trafford et al., 2021](#)) Devices alone, as good as they may be developed, cannot solve the problem, a comprehensive approach is needed between government, employers, community, education, private sector, and world organizations. This approach will facilitate the right design for the adaptive technologies needed to foster an inclusive society.

### **Assistive Technologies in Costa Rica**

In Latin America, where many countries are not developed, barriers for the people with disabilities are big. According to the Human Opportunity Index (HOI), people with disabilities have lower employment rates, that the rest of the population, even so in developed countries like mentioned before Sweden. ([Pinilla-Roncancio et al., 2023](#)) Colombia and Costa Rica have the highest employment gaps overall, and hence more severe exclusion from the workforce for people with disabilities. Enterprises need to create more inclusive work environment and practices that foster retention for all employees equally including disabled ones.

In Costa Rica, 68% of people with disabilities used assistive products, while 47% reported unmet needs to aid their disability. ([Coto-Solano, 2022](#)) Product availability and affordability are part of the key items that yield those results and are barriers for the country in terms of access to assistive technology. The primary barrier is the financial constraint of being able to get assistive products or technology, as many people must pay themselves to get access, resulting in high unmet needs.



## Methodology

**Methodology approach:** This investigation uses quantitative data gathered via an online survey.

Research tends to identify, how many people working for international companies in Costa Rica are aware of assistive technologies within their company.

The variables gathered will be demographics: age group, gender, and education level. Company details such as: role, area of business and work location.

Key questions will focus on the existence of assistive technologies and policies around them within the company.

([Smith et al., 2020](#)) used an online survey to conduct rapid data gathering for four weeks, like this research. Invitations were shared within local and regional networks, same for this research. The network of people working for international companies will be used for survey. The online survey got a good response: 80% completed it all, hence choosing this method.

Other research done ([Coto-Solano, 2022](#)), the survey methodology is applied which exemplifies success case to properly reach the Costa Rican population.

**Primary Data:** Online Survey will be used to collect quantitative data.

Surveys are especially useful to get good responses, and they simplify the recipients getting them, responding on their own time. For example, ([Johansson et al., 2021](#)), used surveys in Sweden for their analysis of assistive technologies for people with disabilities.

([Cheausuwantavee et al., 2021](#)) used quantitative method for the labor market between 15 and 60 years, in Thailand and this research focuses on a similar age group. They got satisfactory results with surveys with complete information.

A survey has its limitations, it is more impersonal compared to an Interview, where there is human contact and interaction. Surveys are also limited to the defined number of questions and cannot gather any more information.

**Population:** Will focus on people working on international companies in Costa Rica, from 18-65 years old (working range in Costa Rica), any gender or position within the company.

**Sample:** Population of Costa Rica in 2022, was 5 million ([INEC, 2022](#)). The sample size is 385 people, with a margin of error of 5%. Based on time constraints, a sample of 100 people will be used.

Formula used to calculate the sample:

$$\text{Sample size} = Z^2 * (p) * (1-p) / c^2$$

([Question Pro, n.d.](#))

Where:

- **Z** = confidence level (95%)
- **p** = .5
- **c** = Margin of error (.04 = ±4%)

**Analysis Methods:** Data sheets will be used, based on Microsoft Excel, where data will be downloaded and tabulated. Tables and graphs will be prepared to analyze the results.

### **Evaluation and justification of the methodological choices and risk justification**

Surveys were chosen as they can easily be sent through modern media to a large group, making it possible to gather many responses quickly and have a good response rate, to get the amount of data needed.

Methods like interviews take more time and physical presence, requiring alignment from the interviewer and the responders.

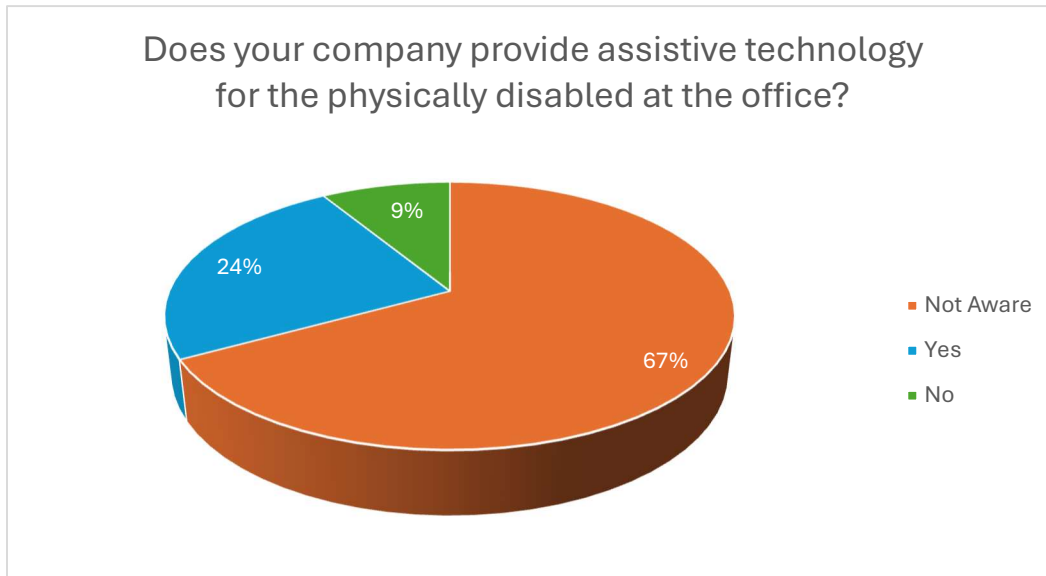
Some risks of online surveys are that people may respond quickly or may miss the multiple-choice selection answer proving biased data.

## Results

Results from an Online Survey, with 128 responses, from those 103 are people working in international companies based in Costa Rica, these will be the basis of the analysis.

### Are assistive technologies provided in the office or home?

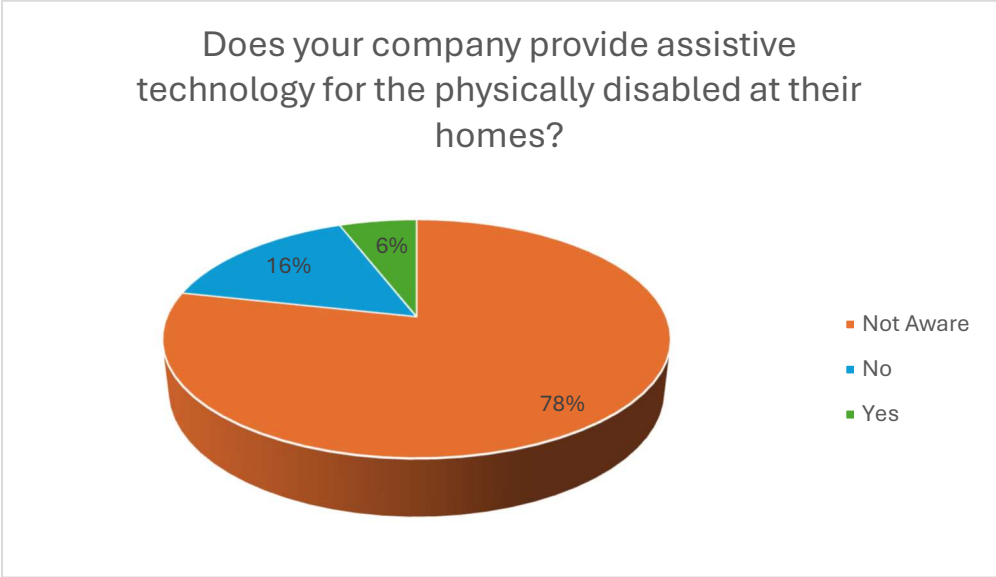
With this graph we identify how many responders have knowledge about these technologies at the office, which is part of the key to the research.



**Figure 1:** Assistive technologies at the office.

67% of the responders were not aware, while 9% responded no and 24% responded yes to have been aware!

With this graph we identify how many responders have knowledge about these technologies at the home, the other key part to the research.

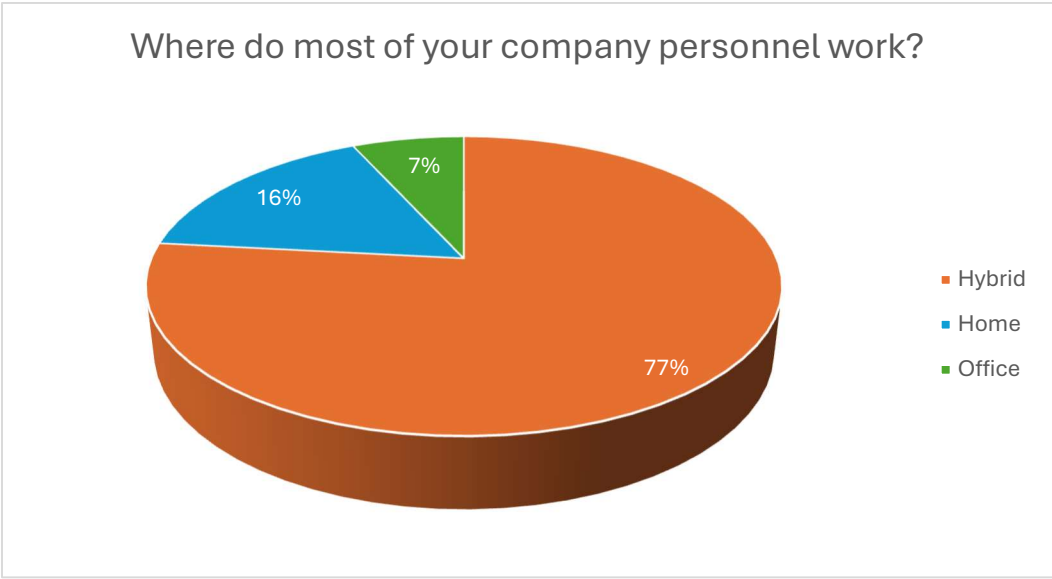


**Figure 2:** Assistive technologies at home.

78% were not aware, while 16% responded no and 6% responded yes to have been aware!

**Location and disabled employees in the workforce.**

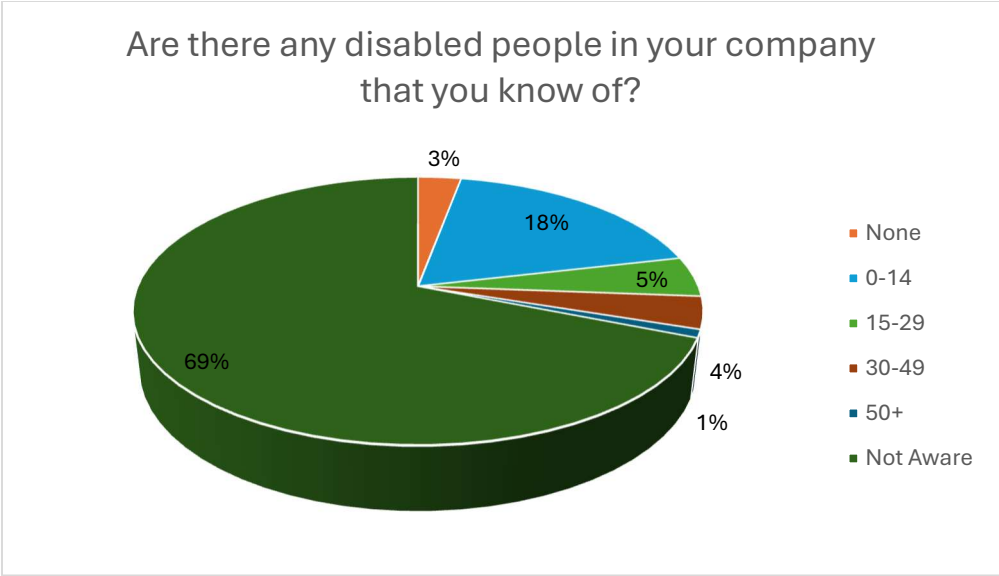
This graph identifies where most personnel work for the companies, to define demographics.



**Figure 3:** Location of the workforce.

77% have a hybrid model, 16% work only at home and only 7% work strictly from office.

This graph identifies knowledge of disabled people at the business, showing awareness of this community.

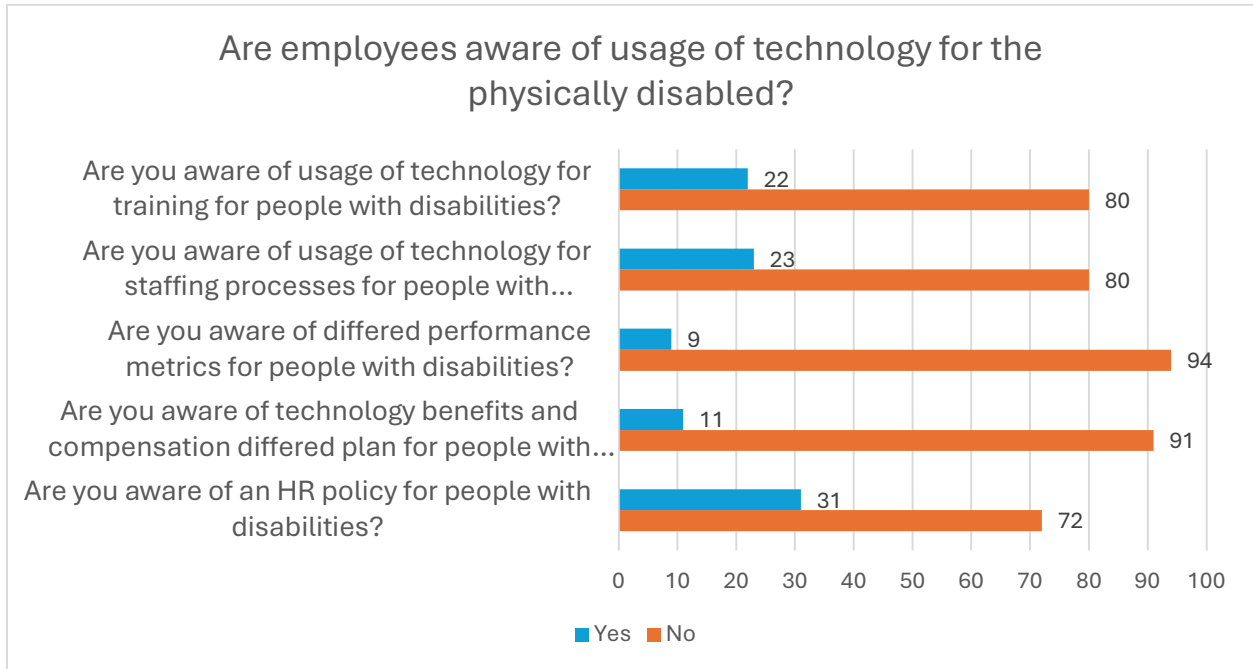


**Figure 4:** Knowledge of disabled people at the businesses.

69% are not aware at all, been a big percentage, not knowing of any disabled in the company.

Knowledge of assistive technologies and policies by the employees.

This graph will be used to evaluate the hypothesis, that In international companies based in Costa Rica, there would be no knowledge of assistive technologies available for the people with physical disabilities.



**Figure 4:** Knowledge of assistive technologies and policies by the employees.

Figure 4 shows the answers from the research on the 5 key questions related to the knowledge of assistive technologies policies in different business processes within Costa Rican companies, with majority answering no.

## Tendencies of knowledge of assistive technologies by different demographic groups.

The question: **Are you aware of an HR policy for people with disabilities?** is mapped towards different variables.

This table identifies knowledge HR policies by gender.

**Table 1:** Awareness of an HR policy by Gender

Gender	Yes	No	Grand Total	YES
Male	15	46	61	24.6%
Female	16	25	41	39.0%
Other		1	1	0.0%

Females are the gender with most knowledge at 39%.

This table identifies knowledge HR policies by age group.

**Table 2:** Awareness of an HR policy by Age Group

Age Group	Yes	No	Grand Total	YES
35-44	17	31	48	35.4%
45-54	8	17	25	32.0%
25-34	4	15	19	21.1%
18-24		5	5	0.0%
55-64	1	4	5	20.0%
65+	1		1	100.0%

65+ with one response and then 35-44 are the group with most knowledge at 35.4%.

This table identifies knowledge HR policies by role.

**Table 3:** Awareness of an HR policy by Role

Role	Yes	No	Grand Total	YES
Individual Contributor	10	33	43	23.3%
Team Leader	3	14	17	17.6%
Manager	10	17	27	37.0%
Director	6	6	12	50.0%
Executive	2	1	3	66.7%

Higher levels are the ones with the most knowledge.

This table identifies knowledge HR policies by Education .

**Table 4:** Awareness of an HR policy by Education

Education	Yes	No	Grand Total	YES
University Bachelors	17	58	75	22.7%
Masters	11	12	23	47.8%
Doctorate	1	1	2	50.0%
High School	2		2	100.0%

Higher education shows the most knowledge (with university degree).

This table identifies knowledge HR policies by business area.

**Table 5:** Awareness of an HR policy by Business Area

Business Area	Yes	No	Grand Total	YES
Finance	4	8	12	33.3%
IT	13	42	55	23.6%
Sales and Marketing	1	6	7	14.3%
Supply Chain	3	4	7	42.9%
Management	5	4	9	55.6%
Human Resources	2	1	3	66.7%
Other	3	7	10	30.0%

Human resources, 66.7% have the most knowledge.

Data on the tables will be used to analyze the objectives, identify the demographics of the population with awareness of these technologies and identify if there are policies the businesses have within their HR departments to use technologies to assist these community.



## Discussion

Topic of the research: **if in international companies with operations in Costa Rica apply assistive technology tools at the business level to facilitate the inclusion of minorities, specifically for people with physical disabilities?** The results show that the answer is no.

**The hypothesis is validated:** in international companies based in in Costa Rica, there is almost no knowledge of assistive technologies available for the people with physical disabilities. From figure 1 and figure 2, employees are not aware, either at home or the office. Without this knowledge , people in the workforce can get discriminated against as indicated by ([Piculo dos Santos et al., 2022](#)).

**The secondary hypothesis,** mostly HR employees and Directors or above will be the ones with knowledge of this matter, is also **proven correct**. Table 3 shows us that for roles of director and above there are most people with knowledge of these policies Table 5 shows that people in HR have the most knowledge the policies. Everyone should be working to better integrate these communities as what the research from ([Blanck, 2020](#)) explains as mandated by the UN.

### Addressing the objectives:

#### **Awareness of assistive technologies within employees working for global companies in Costa Rica.**

From figure 1, 67% of the responders were not aware of any technology for the physically disabled at the office and 9% knew that this was not provided. From figure 2, 78% of the responders were not aware of these technologies for their homes and 16% knew that this was not provided. 76% responded there are no assistive technologies at the office and 94% that none are provided at home.

Figure 3 shows that 77% responded that their company has a hybrid working model and 16% a full remote work from home model; 93% of companies have people working home/hybrid models. Figure 2 shows that 94% of companies do not provide assistive technology for employees at homes and emphasizes the focus on increasing the availability of the technologies for the ones who need them. Similar findings by ([Tamers et al., 2020](#)), that non-traditional work arrangements are a necessary tool.

From Figure 4, 69% responded not aware of any physically disabled at their company and 3%, mentioned that there were none, adding up to 72% of lack of knowledge. Lack of knowledge leads to lack of action towards this community.

## **Demographics of the population with awareness of assistive technologies on their companies.**

From table 1, gender wise; women have more knowledge of policies for the people with disabilities, 39% answering yes vs men, 24.6% answered yes. The average is low with both genders: 31.8%.

Table 2 shows that the age group with more knowledge of policies for the people with disabilities are 65 and above, 100% responded to having knowledge of these policies, (1 response). Age group, from 35 – 44, where 35.4% have knowledge of this policies within their companies. Age group 18-24 had no knowledge at all, which is concerning as this should be known for all generations.

Table 3 shows that the higher the role within the company, the higher the knowledge of policies for the people with disabilities. 66.7% of executives answered yes on having knowledge of these policies, 50% of Directors answered yes. The average was 26% for other levels, demonstrating the importance of these policies to be known across the company at all levels.

Tale 4 shows that people with Doctorate (University degree or higher) are the group that have the most knowledge of policies for the people with disabilities, with 50% responding yes. Other education levels average 35.2% positive responses. There is a need to have all levels of education properly informed on the needs of this community.

From Table 5, employees in HR are the group with better knowledge of policies for the people with disabilities, 66.7% responded positively. Management comes second, 55.6% have knowledge of these policies. Other areas scored 28.8% to the knowledge of these policies. Human resources are the ones aware of the policies and around half of the management teams; all HR and managerial teams should be aware. This demonstrates the need for better training in all other business areas. The pandemic revealed lack preparedness in Assistive Technology ([Smith et al., 2020](#)), which this research shows has not changed much.

## **Policies that businesses have within their human resources departments towards assistive technologies for people with physical disabilities.**

From Figure 4, for the 5 questions related to knowledge of policies for the usage of assistive technology for the people with physical disabilities, 70-90% responded with no. This shows the little knowledge there is of any policies for these topics: training, staffing, performance, benefits and compensation and general HR policies. These topics need to be tailored and adapted to adhere to all employees to avoid bias towards people with disabilities. ([Schloemer-Jarvis et al., 2021](#)) this research shows this is not properly executed.

Performance metrics is the area where there is less knowledge of differed evaluation, which may lead to poor performance and economic differences that may lead to discrimination. 94 out of 103 responders had no knowledge of any differed performance metrics.

The overall knowledge of policies shows 31 out of 103 responders had knowledge of some policy in the overall HR guidelines in the company, meaning 70% of people were not aware of this at all.

One of the limitations on the research is the actual data from the companies on their number of employees and their available assistive technologies for the physically disabled. The research focused on the employees knowledge of this. Further research on the topic within the companies can yield more detailed results but may also be complicated to get information from private companies that may expose deficiencies.

Research showed lack of knowledge assistive technology tools at the business level to facilitate the inclusion of minorities, specifically for people with physical disabilities, within employees of international companies with operations in Costa Rica. This is important as per ([Coto-Solano, 2022](#)) it was identified that 68% of people with disabilities used assistive products, while 47% reported unmet needs.

More research would help to further make awareness of the needed focus on these technologies for the companies and how by doing this and improving the inclusiveness of their workforces can bring economic and social benefits.

## Conclusion

Key points from the analysis done from the research are that in international companies with operations in Costa Rica there is little to no existent knowledge of assistive technology tools to facilitate the inclusion of minorities, specifically for people with physical disabilities.

Both hypotheses were validated, 1 been that there is almost no knowledge of assistive technologies available for the people with physical disabilities. And 2, that mostly human resources employees and Director roles or above are the ones with knowledge of this matter.

Like other research analyzed from other countries, developed country like Sweden and from Costa Rica, there is an evident lack of knowledge of assistive technologies for the physically disabled. It is clear from the research that only the highest levels of management have the knowledge of these technologies, while the rest of the employees are not aware, making it more difficult for people within these communities to properly adapt and make use of any available technologies or policies within the enterprises for their benefit.

Based on demographics, mostly the people with the highest education are the ones that know about these policies, which are the least as well. This clearly shows that education is key and that at all levels of education this topic should be introduced, to avoid the lack of understanding.

It is a critical concern that mostly employees on the Human Resources department are the ones with knowledge of the policies of assistive technologies for disabled people. The companies are made up of a big number of departments and while Human resources is a key part of managing the workforce, it is imperative that all the other functions are properly aware of the policies and technologies for this community, so they can help, assist, and promote the inclusion. The human resources department cannot be everywhere to help with these topics, hence the need for all employees of the company to be properly aware.

To properly include this community in the workforce the right policies need to be in place. There is the need for policies for these topics: training, staffing, performance, benefits and compensation and general HR policies. These policies, when properly defined and available to all employees, can help all the levels and functions to understand how to assist and cooperate with employees in this community. Also, employees from this community will be clear on the available options from the enterprises that can benefit them and how to operate.

The key takeaway from the research will be the lack of attention to this community of people with physical disabilities, and the importance of investing more within different channels to change this. The inclusion of these communities will only foster better collaboration within all the workforce that can translate into economic gains and better results overall for the businesses.

## **Recommendations**

For the recommendations, it is key to expand the research with data provided directly from the companies and not only the employees knowledge of the topic. To conduct extensive research within the companies to identify which are the assistive technologies they have for their physically disabled employees. To get the specifics of the policies they have for employees in this community and to understand how these policies are communicated to all levels, functions, and business areas within the company. Added to this, what training is available or mandatory to all employees on the policies and overall knowledge of options available for this community.

It is recommended that all businesses define a budget for 2 key areas regarding assistive technologies for the physically disabled. 1. Define the budget for the assistive technologies; they should have assistive technologies at the office. For the hybrid working models, they should also define how they will make these technologies available to their employees, how to transport them, maintain them, ensure proper usage, and recover them when needed. 2. Asses the resources necessary for the knowledge campaigns, training all employees on the topics of assistive technologies, to ensure information is available at all levels and that has been shared and anyone can know where to look for it when needed.

Not everything can be done at the business level, this important topic needs to be introduced with the education of the people. The research showed a lack of knowledge of this topic based on education level, where only higher levels of education had knowledge. All levels of education, from schools to universities, must work on collaboration with the government and define how this topic can be introduced, so that everyone can be properly introduced and with some knowledge of this topic. Higher education institutions should include topics related to assistive technologies for physically disabled as part of their curricula, this will help to broaden the knowledge to more people when they start their studies.

Added to the recommendation will be to do research specifically with people in the community of the physically disabled. That entails identifying the people of that community within the companies and conducting further research to identify if they have knowledge of the assistive technologies or policies. Identify if they been part members of this community have the right tools, how hard it has been to get access to these technologies and their general opinion and responses of how the company helps them with these conditions.

More research is recommended on what are the current available assistive technologies, identify which educational, private or government institutions are working on these technologies, what is the availability they provide and costs. How can they be approached and how do they collaborate with the community to get their input for development and testing of these technologies?

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## Attachment

Survey Link: <https://jacampos00.questionpro.com/t/AbhgnZ4ezv>

## Survey Results:

