INVENTOPIA 2025

FBM-SEREMBAN INTERNATIONAL INNOVATION COMPETITION (FBM-SIIC)

INNOVATION IN ACTION: TURNING IDEAS INTO REALITY

Chapter 37
VeloMove

Nornadhiella Azlynn Binti Norazmir, Nur Aina Binti Zamsol, Nur Afzan Binti Mohd Khirrudin, Muhammad Lokman Mukri Shah Bin Nuradli Ridzwan Shah, Muhammad Syafiq Bin Huzaimi & Mohd Isham Bin Abidin

Universiti Teknologi MARA

2023423534@student.uitm.edu.my

ABSTRACT

VeloMove is an innovative wheelchair designed to support individuals with disabilities in securing employment within the trade and logistics sectors, particularly in warehouses and airports. This project, developed under IBM554 – International Trade, explores how inclusive mobility solutions can contribute to workforce participation and global trade integration. The problem addressed is the lack of job opportunities for disabled people and lack of functional mobility equipment tailored for labor-intensive trade environments. We investigated the issue by distributing surveys and secondary research. VeloMove aims to solve this issue through its advanced innovation with steering, braking system, and detachable wagon feature—enabling users to safely and effectively handle goods in demanding settings. The objective of the project is to develop a product that increases inclusivity in job employment and improves technological inclusion. The materials and methods include the parts used and how to use VeloMove. Hence, VeloMove demonstrates the potential of inclusive innovation to drive economic participation and support international trade goals. It offers a meaningful solution that aligns with sustainable development and expands opportunities for a typically underserved workforce segment.

Key Words: VeloMove, international trade, inclusive innovation, technological inclusion, workforce accessibility

1. INTRODUCTION

During today's time, trade is a major part of everyone's lives. Efficiency and accessibility are a must in order to work in the trade sector. This makes job opportunities for disabled people ever more scarce as for example warehouses and airports have strict deadlines. As stated by (Pulrang, 2022) "the job gap between people with disabilities and without has always been enormous and any attempts to close it is not effective. This is due to the operational and infrastructure constraints that are faced when working in these fields.An innovative solution that we have come up with is called VeloMove. VeloMove is a wheelchair that pulls wagons that are attachable and detachable. This can allow them to work by bringing boxes in

warehouses or luggage in airports. With its state of the art technology this wheelchair can improve mobility, increase work speed and does not steer too far from the original process. The wheelchair also stresses comfort and safety. The problems that we found in order to make this innovation, the objective that we wish to achieve, the materials used and method of using this wheelchair, and the sketch of this product will all be discussed in more detail in the parts that follow.

2. PROBLEM STATEMENT

A lot of people with disabilities actually have the skills and motivation to work, but their chances are really limited because the equipment available just doesn't match the kind of physical work needed in places like airports, factories, or warehouses. The issue isn't their ability but it's the lack of proper tools to support them. Regular wheelchairs are fine for everyday stuff, but when it comes to jobs that involve carrying things, pushing trolleys, or moving quickly over long distances, they just don't cut it. But if companies could provide more advanced powered wheelchairs which are easier to control, can pull loads, and have storage space, it could open up a lot more opportunities and let them work just like anyone else.

3. OBJECTIVE

The development of the wheelchair could assist many disabled people with finding employment whether in international airports carrying luggage bags or in warehouses. With the help of assistive technology, such as sensors and cameras, allowing them to move things more efficiently. This advanced logistic technology which are the scanner, sensor, and tracking technologies was frequently used in worldwide logistics hubs and has the ability to export to other potential countries that are investing heavily in advanced technology trade services. This will benefit them in international trade agreements, as well as government contracts for assistive technology created from the unique wheelchair that not only assists disabled people, but also contributes to the country's economic trade.

4. COMMERCIALIZE POTENTIAL

This innovative wheelchair was limited because of the opportunities given to the company who were invested in global trade. The quality itself was at the greater that makes every company eager to purchase while it lasts. This excellent opportunity can help companies to improve its position in global trade by providing job chances for disabled people while also filing a labor shortage in areas such as airports, which require a large number of workers in order to operate. Obtaining government grants can make this product more affordable to sell. With the government incentives, production costs can be reduced, allowing businesses to focus more on providing affordable rates to customers while providing the high quality to the buyers. This benefited the buyer as they did not have to worry about legal requirements because the product has already received government grants. They can avoid legal penalties and fines by purchasing products that have previously received subsidies from the government. This product design was extremely efficient and specifically designed for the airport environment. With smart technology, which includes a scanner and a camera to monitor bags in and out, the labour of two people will be reduced to one. Using these tools

allows the company to minimize labour costs and operate more efficiently while increasing the total number of cargo loads in a day.

5. NOVELTY

A conventional luggage carrier train is very efficient and fast when transporting items and goods. Though it can only be used by the people who are able and qualified. Drawing inspiration from this and wanting to be more inclusive in the trade workplace, we have developed an innovative wheelchair that can help people with disabilities. This advanced wheelchair integrates cargo-carrying capabilities with assistive technology for latching and unlatching the cargo. Unlike normal wheelchairs and normal carrier trains, we have also added easy mobility and steering and even tools for parking, reversing and speed. This design was thought in mind for inclusivity and productivity, further empowering people with disabilities to help them gain more job opportunities in the trade sector. This is a first in the innovative trade sector as none have done this before. This innovation signifies a pivotal step toward a more equitable and accessible workforce in international trade.

6. BENEFIT TO COMMUNITY

When we give people with disabilities the right equipments like powered wheelchairs built for work we're not just helping them, we're also strengthening the whole community. More people working means fewer dependents and more income circulating in the economy. That benefits everyone. At the same time, we can lead in developing assistive technology, that's a real advantage. The world is paying more attention to inclusive practices. If our products meet those needs, we could become a known player in that space and that can boost our trade potential. Next, related to reputation as well. Countries and companies that treat workers fairly and support equal access are more respected in global trade. In fact, those values often show up in trade deals and partnerships. Most importantly, giving someone the chance to work changes their life. But it also helps their families and communities. They become more independent. Other than that, when they spend more, that spending helps local businesses. It's proof that inclusion isn't just the right thing to do it's also good for the economy.

7. FEEDBACK FROM COMMUNITY

A total of about 34 students responded to our study, which we have been conducting among UiTM students. All of them had to respond to it, nevertheless, taking into account the needs of current situations and the interests of disabled individuals who wanted to apply for jobs, particularly in the trade sector. It shows that only five minority respondents, however, believed that the working environments in airports and warehouses were accessible to people with disabilities. As for the remaining 27 respondents indicating that some workplaces are still thinking about including disabled people. This makes sense given that the airport and the warehouse were both busy spots. Meanwhile, it also shows that 28 of the 32 respondents cast a vote on the 4–5 scale. This clearly demonstrated that they admitted that our invention, VeloMove, could boost task performance. Furthermore, we designed this product with the intention of meeting users' expectations regarding comfort and safety. To sum up, the survey's findings indicate that the majority of respondents are aware of the value of our product

VeloMove for disabled people working in the trade industry. Investing in employment training and cutting-edge solutions like VeloMove can boost disabled people's participation in the trade sector and greatly increase productivity.

8. PRODUCT DESCRIPTION

Loading bags onto planes can be challenging. Bags get lost, misdirected, or damaged. Employees are handling heavy bags throughout the day, which is dangerous to them and takes a lot of time. When bags are loaded in an ismproper manner, the plane gets unbalanced. Lifting machines can harm the plane, and the moving vehicles burn fuel, which pollutes the air. Additional bags also weigh down the plane, so it uses more fuel.The VeloMove wheelchair allows individuals with disabilities to travel through airports without difficulties. It's made of tough, light material that won't rust. It has little carts for carrying bags, so one does not have to lift anything. The carts glide smoothly and quietly. The wheelchair has soft wheels and a waterproof, padded seat for comfort.It is driven by a quiet electric motor and is easy to drive with a remote. The buttons are easy to press, and the remote is Bluetooth-powered to control the wagons. It is recharged with a USB cable like a phone. The user operates it by sitting down, securing the belt, and switching it on. He/she operates it via the remote control and can switch it off for offloading packages. It can be recharged in the event of low battery. VeloMove enables airport travel with ease and autonomy for people with disabilities.

9. CONCLUSION

Many disabled people face employment issues due to the lack of tools and workspaces that cater towards their requirements. This is apparent in workplaces where mobility is important and equipment is scarce, such as warehouses and airports. We solved these issues with the creation of VeloMove. This innovative wheelchair can help disabled people carry out tasks with an attachable wagon and motorized wheelchair. We have made sure to balance the safety, comfort and functionality when creating VeloMove in order to maximize the workload. It is guaranteed that VeloMove is convenient whether traversing airport terminals or warehouse halls. This is due to the aluminum frame, plastic wagons, high-traction wheels, and strong battery. VeloMove is much more than a mobility device, it is a signal for change in the employment and accessibility of disabled people in trade workplaces.

REFERENCES

Fcn, S. G. M. R. (2025, February 7). Best Power Assist Wheelchair devices. Rehabmart.com. https://www.rehabmart.com/post/best-power-assist-wheelchair-devices

Flexco. (2023, July 5). 4 Logistical Baggage Handling System Problems [and some easy ways to fix them!]. Flexco.com; Flexco https://uk.flexco.com/EN/Blogs/logistical-baggage-handling-problems.htm

PineappleDigital. (2023, December 29). Assistive Technology in the Workplace for People with Disabilities - *ALSO. ALSO. https://alsoweb.org/nonprofit-blog/assistive-technology-in-the-workplace-for-people-with-di sabilities*

Pulrang, A. (2022, October 31). Why is the employment gap for people with disabilities so consistently wide? Forbes. https://www.forbes.com/sites/andrewpulrang/2022/10/31/why-is-the-employment-gap-for-p eople-with-disabilities-so-consistently-wide/

SCIRE Professional. (2022, June 13). Power Wheelchairs - SCIRE Professional. SCIRE Professional. *https://scireproject.com/evidence/wheeled-mobility-and-seating-equipment/power-wheelchairs*

Technologies, T. (2024, November 12). Supply chain Technology: Reshaping global logistics and business operations. trax. Retrieved May 1, 2025, from https://www.traxtech.com/blog/supply-chain-technology-reshaping-global-logistics-and-business-operations?