PhD position in Health Economics
LUSSI Département

Thesis subject: Economic evaluation and business models of innovative medical devices for people with disabilities

Research Field: Health Economics, evaluation of public policies, economic assessment, biostatistics, public health.

Key words: Disability, Lifestyle, Innovation, Rehabilitation

1. Context

Presentation of IMT Atlantique:

IMT Atlantique, internationally recognised for the quality of its research, is a leading general engineering school under the aegis of the Ministry of Industry and Digital Technology, ranked in the three main international rankings (THE, SHANGHAI, QS).

Located on three campuses, Brest, Nantes and Rennes, IMT Atlantique aims to combine digital technology and energy to transform society and industry through training, research and innovation. It aims to be the leading French higher education and research institution in this field on an international scale. With 290 researchers and permanent lecturers, 1000 publications and 18 M€ of contracts, it supervises 2300 students each year and its training courses are based on cutting-edge research carried out within 6 joint research units: GEPEA, IRISA, LATIM, LABSTICC, LS2N and SUBATECH.

Environment:

The LUSSI department brings together researchers in machine learning as well as in decision support and in the human and social sciences. This contract will rather fall within the latter group. The department carries out and manages forward-looking thinking, impact studies and evaluations on a few policies related to health and disability in connection with new technologies.

The proposed mission is part of the HIT project, Handicap, Innovation, Territoire, winner of the national call for projects "Territories of Innovation", piloted by Lorient Agglomeration in collaboration with the
Center for Rehabilitation and Functional Rehabilitation of Kerpape and Biotech Santé Bretagne. The general objective of this project is to make disability a lever for social and technological innovation at the service of citizens. Innovative solutions will be developed as part of the HIT project and will aim to meet the different needs of people with disabilities in order to best structure an inclusive territory.

**Research environment:**

The thesis will be attached to the LATIM laboratory, Medical Information Processing Laboratory (UMR 1101) and under the direction of Olivier Rémy-Néris (CHRU of Brest, Department of Medicine rehabilitation), Myriam Le Goff-Pronost (IMT Atlantique) and Willy Allègre (Kerpape rehabilitation centre).

The LaTIM is a joint unit (UMR1101) of Inserm, University of Western Brittany (UBO), IMT Atlantique and associating the CHRU of Brest. The laboratory develops multidisciplinary research where information sciences and health sciences enrich each other. His research problem concerns the continuous optimization of therapeutic actions by integrating multimodal information. The thesis is part of the work of the Imagine team, Integration of multimodality information for decision support and gesture optimization in interventional therapies where the objective is to develop and make available to therapists, integrative decision support models.

2. **Problem statement**

The report "Des aides techniques pour l’autonomie des personnes en situation de handicap ou âgées: Une réforme structurelle indispensable" (Denormandie, Chevalier, 2020) highlighted the difficulties of taking charge of technical aids for people with reduced autonomy and in particular the logic of purchasing new devices to the detriment of a logic of use. The economic models of innovative devices in disability sector have yet to be created and the efficiency of these devices to be demonstrated.

The thesis work will consist in questioning the implementation of medico-economic evaluations of innovative medical devices proposed within the framework of the HIT project, mainly technical aids relating to rehabilitation. The HIT, Handicap, Innovation, Territoire, project, winner of the national call for projects "Territoires d’Innovation", piloted by Lorient Agglomeration in collaboration with the Kerpape Functional Rehabilitation Center and Biotech Santé Bretagne, aims to make disability a lever for social and technological innovation at the service of citizens. Innovative solutions are developed and aim to meet the different needs of people with disabilities in order to best structure an inclusive territory.

It will be a question of discussing the relevance of the criteria of effectiveness and costs mobilized in medico-economic evaluation and their implementation within the framework of emerging innovations for the handicap and their implementation at home. The thesis will aim to bring a methodological reflection on the evaluation indicators and in particular the question of the indicators of quality of life mobilized during medico-economic evaluations. Are they adapted to situations of major disruptions in lifestyles? More broadly, it will be a question of contributing to methodological reflections on the
methods of evaluation of innovative medical devices, their pricing and financing, their economic model.

This is a thesis in applied economics. Devices to be evaluated have been identified: exoskeleton robots, devices from the Rehab-lab, robotic arms, etc. A literature review on the criteria of quality of life adapted to rehabilitation should be conducted and their mobilization within a medico-economic evaluation. The added value of the thesis will be the reflection on alternative evaluation scales adapted to breakthrough innovations for people with disabilities.

The results of these evaluations will make it possible to choose systems to be maintained in the long term.

3. Training and skills

We are looking for a student with a master’s degree or equivalent in economics, biostatistics or statistics, or public health.

**Essential skills, knowledge and experience**

- Mastery of the main economic assessment methodologies.
- Mastery of statistical and modeling tools.
- Knowledge of the disability and rehabilitation sector.
- Knowledge of public policy evaluation.

**Abilities**

- Creativity, autonomy and sense of initiative;
- Analytical and synthetical mind;
- Editorial ability;
- Teamwork.

**Additional information**:

This thesis is funded by the Brittany Region (ARED, Allocation de Recherche Doctorale), and a part of the HIT project.

The position is a full-time fixed-term contract under public law for 36 months, to be filled from September 2022 and no later than December 2022. It is based in Brest.

Remuneration will be based on degree level and experience.

Please send CV and cover letter before 08/20/2022 to myriam.legoff@imt-atlantique.fr.

For more information, contact Myriam Le Goff-Pronost, myriam.legoff@imt-atlantique.fr.