VH Innovation Ltd Briefing Document

Background to your organisation

VH Innovation Ltd is a new company set up by recent graduate of Strathclyde University, DMEM, Victoria Hamilton.

She set up her company after identifying a gap in the market for high performance, durable protective knee pads for the construction industry which could prevent longterm knee joint damage suffered by construction workers as a result of repetitive kneeling.

Her first knee protector product was initially developed as Victoria's final year design project within the department of design, manufacture and engineering management (DMEM) at Strathclyde University. She developed the product to address the problems encountered with many current knee pad products as highlighted by her father, a joiner, who has been within the joinery trade for over 25 years. The main problems were identified as current products are not comfortable, not protective and not practical for undertaking the work in hand. In addition, these problems were discussed and further highlighted within the general DIY and Gardening markets through speaking directly to customers during the Victoria's part time work at Homebase.

Identifying a gap in the market, Victoria entered the Santander Universities Entrepreneurship Awards competition and Young Innovators Challenge competition. She won, between the two competitions, a total of £55,000 to invest and set up the business.

At present, Victoria is the sole employee of VH Innovation Ltd. However, she works closely with an outsourced team of product designers at i4 product design in Edinburgh. Through the combined efforts of i4 and VH Innovation, Victoria lead the product development towards a final solution for the trades and construction industry estimated for completion in July 2014. With the completion of this product on the horizon, Victoria is looking to investigate and identify any opportunities to develop the technology and design into the extreme sports market.

Background Research

During the development of the knee protector for the trades and construction industry, Victoria carried out a vast amount of research. Her findings highlighted the need for the product based on the vast amount of academic research which hypothesises and suggests that kneeling poses a risk in the development of medial tibiofemoral osteoarthritis and infrapatellar bursitis (Rytter, 2009; Kirkeskov, 1996; Thun, 1987; Coggan, 2000; Spector, 2011; Rytter, 2008).

She also identified a recent study, by Reid, suggesting that future knee pad designs should focus on reducing the pressure to the bursa areas along the patellar tendon and tibial tubercle (Reid, 2010). Other researchers make suggestions that knee pads

should increase thigh-calf contact in order to reduce loading at the knee joint (Kirkeskov, 1996) (Pollard, 2011).

Calls for new knee pad designs did not stop at academic research; calls from Government and health bodies indicate that with the cost of knee replacement surgery costing the UK on average £7,000 per operation, and with 68,450 knee operations in the UK in 2006, the cost of damaged joints to the UK Government is high.

A new knee pad design by VH Innovation Ltd, takes these recommendations into account and aims to produce a new improved method of protecting the knees. It is hypothesised that this new technology used within the product will more evenly distribute the forces across the knee joint and reduce impact energy absorbed by the joint's much better than current products available on the market. A patent has been filed for this technology.

An initial force distribution comparative study of the new design and current products on the market is in the process of being carried out by the Bioengineering department at Strathclyde University; this work is due to be completed in May 2014. The results of this initial study will be used to further develop the design and will provide the basis for further studies and form the basis of a marketing campaign which will hopefully be able to claim this technology is more protective than gel or foam.

Background to problem

The problem VH Innovation faces is how best to develop the technology for the extreme sports market – primarily for snowboarding and skateboarding. The construction and trades knee product was developed with first-hand experience and knowledge of the problem being addressed and was only developed to address the knee protection element. Branching into the extreme sports market is slightly more complicated than the initial product due to the following:

- a lack of knowledge of the sports themselves
- the complication of different joints requiring protecting
- a lack of knowledge and understanding of the impact forces the joints will be exposed to in a collision
- a lack of knowledge of current products available
- a lack of understanding of the market and user needs
- a lack of understanding of the unique selling point of the product for this market

From the above, the problem can be separated into two distinct areas, with each area having a number of key points to be addressed:

Area 1 – The Medical, Health and Biomechanical Aspects

Area 2 – The commercialisation opportunity

Aims and objectives of the project

The aim of the project is to provide VH Innovation with an overview of the extreme sports market and make recommendations of the key requirements and USP's of the product to enter this market.

In order to achieve this aim, the following are set objectives for each specific area:

Area 1 – The Medical, Health and Biomechanical Aspects

- Provide an explanation of the biomechanics of the different types of joints (knee, ankle, shoulder, elbow)
- Research and provide information on the impact forces and pressures on the joints during (snowboarding/skateboarding) collisions
- Identify any areas of the joints which are prone to damage and provide recommendations of areas where the protection should be focussed
- Make recommendations on possible methods of testing the impact absorption of a prototype

Area 2 – The commercialisation opportunity

- Identification of Market opportunity
    - Market size as a whole
    - Identification of sports utilising joint protection
    - Revenue potential
    - Overview of any specialist equipment used in extreme sports for joint protection
- Provide an overview of current products available (including price points and identification of most popular products)
- Identify any top selling brands for potential partnerships or licensing deals
- Develop and provide an understanding of the user and their needs/requirements for joint protection e.g. ages, demographics, requirements, what they like about current products, what they don't like about current products, price points, what they currently use etc.
- Make recommendations on the key requirements and unique selling points of the design for this market

Expected outcomes at the end of the week

There are three expected outcomes for the end of the week. These are:

- A brief t research report which addresses each of the noted objectives, and will therefore fulfil the aim of this project.
- A specification/summary document of key design requirements for a joint protector in the extreme sports market
- and summary presentation highlighting key findings

Contact details.

Name: Ms Victoria Hamilton

Email: victoria@vhinnovation.com

Mobile: 07944125234