Chapter 63
A Forecast of the Adoption of Wearable Technology

Tom Page
Loughborough University, UK

ABSTRACT

This research aims to quantify the current market size for wearable technology, and determine why this market has struggled over the past decade. These are products which are worn on the body and enhanced using electronics. Forecasts have been made as to how this wearable technology is likely to develop in terms of market size and product design or function. It is predicted that in five years the wearable technology market will be several times larger than it is currently, and entertainment devices will overtake fitness to become the largest product category. Medical devices will be used to reduce healthcare costs by monitoring patients within their own home and wearable technology will allow businesses to improve customer relations and productivity.

1. INTRODUCTION

The previous year has seen a marked increase in the number of companies that have released, or are planning to release, wearable technology (WT) devices in the hope that these products will become the next major sector of growth within the consumer electronics industry (Stinson, 2013). These products are worn by users to prevent them from being inhibited by the device. This research focused on the development and future of WT, and aims to test two hypotheses. Firstly, that despite this product market existing for several years it has thus far failed to become commercially viable due to it being made increasingly redundant by the rise of smartphones, and secondly that these products are, will continue to be unpopular with the older generation who are more technologically averse.

Predictions of market growth and technological developments were collected from secondary research sources. Consumer's attitudes were investigated through a combination of primary and secondary research. A mixed method approach was adopted here which comprised online questionnaires used to quickly gain quantitative data that can be easily compared to discover overall trends, and qualitative data from group interviews were used to add further significance to these results by providing a better understanding of consumer's feelings (QRCA, 2013).

DOI: 10.4018/978-1-5225-5484-4.ch063

1.1. Limitations

The limitations of the research methods chosen were also be considered during data scrutiny to determine areas for further research. The intended contribution to current knowledge identifies a number of barriers to the adoption of wearable technology with a view to forecasting the wider adoption of wearable technology.

2. LITERATURE REVIEW

Wearable technology is a term that refers to garments or accessories that are created or enhanced using electronics (King, 2011). They serve users by providing them with information or entertainment (Buenaflor et al., 2013) and due to their close proximity to the body they can be used to better monitor information about a user or their surroundings (Svanberg, 2013). WT is further differentiated from other portable devices such as mobile phones in that it is designed to be indistinguishable from everyday life (Casson et al., 2010) so that it may go unnoticed.

Generally WT can be divided into two distinct categories. The first of these is 'wearable computers' (WC) where electronics are housed within a fashion accessory such as a bracelet or a watch. Due to their discrete nature, WC can enable consumers to carry out tasks in a relatively unobtrusive way and socially acceptable way leading to increased levels of productivity or enjoyment (Rackspace, 2013a). Secondly there are 'smart textiles' (ST) where using either the physical properties of the material, or electronics woven into the fabric, products can measure and/or react to stimuli from the user or environment (Hertleer et al., 2012). Whilst being more limited in their range of user interactions than WC, ST allows users to wear sensors comfortably for longer periods of time without skin irritation. This makes them more useful for long term monitoring applications or for circumstances where aesthetics are highly important (ibid). The first wearable computer was shown in 1966 by Thrope and Shannon; a cigarette-pack sized analogue computer with four buttons, it measured the speed of a roulette wheel and transmitted predicted results to an earpiece (Seymour, 2008). However the consumer wearable products market did not begin until the mid-1970's with the release of calculator watches such as HP's 01 (Rhodes, 2001). As devices at this time were driven by the miniaturisation of electronics with technology becoming 100 times smaller each decade (Evans, 2013), watches were a popular starting point for WT as expanded functionality could be achieved without precluding 'wearability' (King, 2011). Evolving from this came one of the WT industries first major successes, the Casio Databank watch (Figure 1); it was capable of storing contact information and went on to sell almost six million units (Casio, 2010).

By the late 1970's the WT market had also began expanding into the entertainment industry and quickly achieved success with Sony's 'Walkman' cassette player (Figure 1) in 1979, which went on to sell 220 million units (Jarman, 2010). Not all forms of WT were as successful, with the 'Private-Eye' head-mounted display failing to become financially viable despite being incorporated in the 'Nintendo Virtualboy' videogame system (Rhodes, 2001), but nevertheless WT has seen strong sales in the past. Wearable devices have often reflected changes in technology with the 'Walkman' being updated to use the proprietary CD format, and with the release of the GPS 'Pathfinder' system which represents just one of many devices adapted from military technology. Eventually in the 1990's WT was utilised within