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**THE IMPACT OF THE TECHNOLOGY NEW ZEALAND
SCHEME ON SMALL-AND-MEDIUM ENTERPRISES
IN NEW ZEALAND**

A Thesis presented in partial fulfilment of the requirements
for the Degree of Masters of Technology in Product Development
at Massey University

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ABSTRACT

The purpose of this research study was to examine the impact of the Technology new Zealand Scheme (TechNZ) on small-and-medium enterprises (SMEs) in New Zealand where the focus was on participants of the Technology for Business Growth programme (TBG). In addition, the relationship between the product development process, technological capabilities, and Research and Development (R&D) investments of these companies were explored.

Technological innovation has become one of the key drivers for company successes. Technological innovation has been defined as a learning process through which companies assemble the intangible assets of human capital and knowledge, and apply them to economic opportunities (Winsley, 1997).

Within the technological innovation framework, there are three critical success factors that are very important. These are: the product development process, R&D and technological capabilities within companies. This ability to successfully create technological innovation into new products and processes is critical to the ongoing survival of companies.

The New Zealand Government acknowledged technological innovation as the key factor for sustaining the growth of the New Zealand economy. Therefore, in 1997, the Technology New Zealand Scheme (TechNZ) was established and is administered by the Foundation for Research, Science and Technology (FRST).

The TechNZ Scheme provides part-funding for small-to-medium enterprises (SMEs) to conduct R&D activities. The aim of the scheme is to increase the ability of companies to adopt new technologies for business growth. There are three programmes that are available through which companies may access funding. These are: the Technology for Business Growth Programme (TBG), the Technology for Industry Fellowship Programme (TIF) and the TechLink Programme.

The research was based on case studies and questionnaire surveys where respondents operate in the electronics, software and manufacturing sectors nationwide. A 13-stage product development model by Cooper and Kleinschmidt (1986) was used for this research in order to gain insight into the companies' product development activities.

The research showed that the majority of the companies saw product development as an important organisational activity. However, only 42% of the responded companies use a formal product development process. The most frequently used product development activities related to the physical design of products. The least frequently used activities were detailed market research, market test and pre-launch business analysis. This could possibly be because these activities are intangible elements of the product development process. Therefore, it may be difficult for companies to quantify the benefits of them, so less emphasis are sometimes placed on these activities.

Over 90% of the responded companies indicated R&D to be important to the overall success of their company, and most believed there exists a positive relationship between market position and levels of R&D investment.

Respondents believe that technological capability lies deeply in human capital where equipment plays a minor role. There shows a positive relationship between the elements of product development, R&D and technological capability. These are inter-related. In order for companies to successfully innovate, they are required to be technological capable, using this capability to assist with their product development and R&D activities leading towards innovation.

In general, TechNZ presents an excellent image to respondents in their operations and in the services that it provides. Respondents provided a number of valuable suggestions to TechNZ, including: offering larger sums of funding, providing clearer instructions in TechNZ application packs, and funding wider areas of funding. Therefore, results from the current study showed that TechNZ is putting a positive impact on New Zealand SMEs via the TBG programme.

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