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## Environmental jolts, entrepreneurial actions and value creation: A case study of Trend Micro

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#### **Abstract**

This paper draws on a single longitudinal case study of Trend Micro, a leading anti-virus company, to examine its entrepreneurial, value-creating trajectory. Applying and extending an entrepreneurship perspective, the paper manifests positive effect, rather than negative effect, of environmental jolt on entrepreneurial actions including opportunity identification and opportunity exploitation. We find that environmental jolt is likely to shift customers' cognition, which is an important source of opportunity and, in turn, catalyzes opportunity exploitation through innovations for value creation. The paper concludes with a model of the value-creating trajectory of Trend Micro. Implications for research and practices are discussed.

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#### 1. Introduction

Entrepreneurship has been recognized as important for value creation [1–4]. Entrepreneurship requires entrepreneurial action for opportunity pursuit. "Entrepreneurial action refers to behavior in response to a judgmental decision under uncertainty about a possible opportunity for profit [5] (p. 134)."

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In other words, entrepreneurial action is a means of pursuing opportunity to the end of value creation. "After entrepreneurs notice an opportunity they need to identify the steps need to exploit it. This action is what really constitutes entrepreneurial action [6]." Indeed, entrepreneurial action involves opportunity identification and exploitation [7–9].

Environment has a crucial influence upon firms' entrepreneurial actions [10–12]; for example, environmental jolts are the catalysts for entrepreneurial actions [13] (p. 185) that change the way people think and thereby verify the feasibility of entrepreneurial opportunities, support opportunity exploitation and create value. Further, value creation can arise from entrepreneurial actions, environmental jolts and, explicitly, even from the synthesis of entrepreneurial actions and environmental jolts.

This longitudinal case study of Trend Micro argues that value creation arises from the synthesis of entrepreneurial actions and environmental jolts. In the value-creating trajectory of Trend Micro, this company first identified four entrepreneurial opportunities: the potential crisis of the C-Brain virus, the anti-virus work on Local Area Networks (LAN), the potential threat of e-mail viruses and the need for an anti-virus outsourcing service. Since the company's rivals and customers ignored these profitable entrepreneurial opportunities, Trend Micro developed innovative practices to meet its customers' needs for an anti-virus service. Subsequently, environmental jolts such as the viruses – mutated C-Brain, Michelangelo, Taiwan No.1, Melissa, CIH and Explorer worm – catalyzed entrepreneurial actions, driving customers to recognize the importance of protecting themselves against viruses. This shift in customers' cognition meant that entrepreneurial opportunities were feasible. Finally, the synthesis of entrepreneurial actions and environmental jolts caused by the threat of viruses led to value creation.

In this study, we highlight the importance of a synthesis of entrepreneurial action and environmental jolts in a firm's value-creating trajectory. Understanding the relationship among entrepreneurial actions, environmental jolts and value creation can extend the literature on entrepreneurship for value creation [8]. This paper consists of five sections. First, we describe entrepreneurial actions, including opportunity identification and opportunity exploitation, as well as the effects of environmental jolts. Second, we present the data and methodology. The third section is an analysis of the value-creating trajectory of Trend Micro. The fourth section is a discussion of our conclusions. Finally, we examine the implications of the results for managers and researchers.

#### 2. Theoretical background

The field of entrepreneurship emphasizes value creation through opportunity seeking [14]. Entrepreneurial opportunity is a bundle of unrealized values [4]. The purpose of opportunity identification is to seek profitable opportunities that others have not identified or exploited [15]. Stevenson et al. [16] argue that identifying and selecting the right opportunities are the most important capabilities of entrepreneurial firms.

After identifying an opportunity, entrepreneurial firms exploit it [9]. Among the actions of opportunity exploitation, innovation is an effective practice of value creation [7,17–19]. Smits [20] (p. 865) describes innovations as the "things that hurt your toes if you drop them out of your hands." Innovations can be technical and administrative [21,22]. Technical innovations are "innovations that occur in the technical system of an organization and are directly related to the primary work activity of the organization" [22]. For instance, innovative information technologies could create value for

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