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Firms' intentions to use genetically modified organisms industrially: The influence of sociopolitical-economic forces and managerial interpretations in the Korean context

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ABSTRACT

The industrial use of genetically modified organisms (GMOs) has been highly controversial for many reasons. The controversies lead to a gap between societal needs and expectations of the potential benefits and risks related to the industrial use of GMOs. This gap has been imposing society-specific political-economic pressures on firms. These pressures derive from the external stakeholders' needs and expectations that GMOs will assume an important role in creating business opportunities for and damaging the social reputations of firms. This paper, by drawing upon the literature on managerial interpretations of issues, investigates the way sociopolitical-economic forces and managerial interpretations influence firms' intentions for the industrial use of GMOs in the Korean context. It uses a structural equation modeling (SEM) approach. Results based on survey data from 145 manufacturing companies indicate that social acceptance, and managerial interpretation influenced mainly by market attractiveness, will both make a significant contribution to the prediction of firms' industrial use intentions of GMOs. Market attractiveness was not a significant factor affecting the use intentions of GMOs directly. Some insights into what governments should do to promote sustainable use of GMOs in their countries are proffered.

1. Introduction

The industrial use of genetically modified organisms (GMOs) is currently positioned as one of the most significant and contentious global societal debates. This debate entails the perceived economic benefits for firms that can successfully capture competitive advantages through the industrial use of GMOs on the one hand and their possible threats to human and environmental health on the other hand. In this context, GMOs are widely used as industrial inputs with various applications in diverse sectors including as food and feed, chemistry, pulp and paper, and textile, among others, and their future use is expected to expand much more rapidly than the present growth rates.

Currently, most firms are fully aware of the strategic importance of issues relating to the industrial use of GMOs. However, many firm leaders think that it may not be easy to actualize the great potential benefits related to the industrial use of GMOs. This implies that it may not be easy for firms to make decisions about using GMOs as inputs to their products because of the inconsistency between the societal needs and expectations of the social acceptance of the potential benefits and risks related to the introduction or industrial use of GMOs [1]. This gap has been imposing society-specific political-economic pressures on firms because the perception of GMOs between countries is often related to society-specific socioeconomic conditions, including historical and ecological factors [2]. According to Wamsley and Zald [3] and Zald [4], these pressures are derived from the external stakeholders' needs

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and expectations that GMOs will assume an important role in both creating business opportunities for and damaging the social reputations of firms. The external political-economic forces therefore influence the managerial interpretations of issues and behaviors.

Business responds to sociopolitical and economic external forces, which respectively stem from the institutional and task environments. According to Carter and Gruére [5], the major criteria for firm decisions pertaining to the use of GMOs are economic incentives and political pressure. Using data obtained from stakeholder panels, Borch and Rasmussen [6] investigated the methodologies for strategic planning and regulatory decision making for the biotechnology industry and public authorities responsible for technologies involving genetically modified (GM) crops. They have shown that economic issues play an important role in the commercial use of GM crop technology and that social and value-based non-economic factors are relevant to the use of GMOs. Institutional theorists assume that organizations seek legitimacy and social approval [7]. From a task environment perspective, organizations are assumed to be motivated by economic considerations [8]. The institutional and task environments are fundamentally different and have potentially opposing requirements [9–11]. However, few environments are purely competitive or exclusively institutionalized [9,12]. Firms must therefore respond to these two very different types of external forces.

Despite the current situation in which firms often operate in environments that impose both institutional and task requirements related to the industrial use of GMOs, no studies have yet investigated the influence of the two requirements on organizational interpretations of issues and intention of GMO usage. This article investigates how sociopolitical-economic forces and managerial interpretations influence organizational intentions with regard to the industrial use of GMOs through the structural equation modeling (SEM) approach proposed by Jöreskog [13,14]. Given the pressures on contemporary firms to be both competitive and socially accountable in their industrial use of GMOs, this article particularly attempts to identify the relative importance of the social and economic pressures that may influence managerial interpretations and usage intentions, which has implications for future research pertaining to the influence of stakeholders on the GMO-related decision-making processes of firms.

The remainder of this paper is organized as follows. Sections 2 and 3 present hypotheses that suggest a specific relationship between sociopolitical-economic forces, firm interpretations of issues, and firm intentions with regard to the industrial use of GMOs. Section 4 describes the research methodology and the instrument used to measure the relationships. The empirical results are presented and interpreted in Section 5. In Section 6, we summarize our main findings and list the implications as well as the limitations of this study.

2. The effects of sociopolitical-economic forces on managerial interpretations and usage intentions

An institutional environment perspective considers the influence of conformity and the advisability of adhering to social rules and norms [11,15]. Institutional environment conceptions, hence, tend to focus on the organizational environment pressures that require organizations to seek social legitimacy and approval [7,9].

According to DiMaggio and Powell [16], managerial decisions are strongly influenced by three institutional mechanisms – coercive, mimetic, and normative isomorphism – which create and diffuse a common set of values, norms, and rules to produce similar practices and structures across organizations in the same organizational field. A firm's organizational field, defined as "a community of organizations that partakes in a common meaning system," consists of regulatory agencies, critical exchange partners, special interest groups, the public, and other organizations that produce similar services or products; these determine the legitimate set of organizational actions to be undertaken by a particular firm [17].

Suchman [18, p. 574] describes legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within the norms, values, belief and definitions of a socially constructed system." The requirements of the institutional environment therefore specify the organizational activities that are publicly or collectively viewed as appropriate, legitimate, or socially acceptable. For this reason, the continually widening of the gap between certain business behaviors and societal expectations will cause businesses to lose legitimacy and threaten their survival [19]. External sociopolitical pressures imply that businesses must depend on society's acceptance of their roles and activities if they are to survive and grow. Hence, institutional theory focuses on how organizational and societal players build consensus around emerging issues such as the industrial use of GMOs.

The industrial use of GMOs is currently positioned as one of the most significant and contentious global societal debates. Although GMOs may offer great potential benefits to various industrial manufacturing sectors, there are many human health and environmental concerns with regard to the potential dangers of the industrial use of GMOs. The public concern about GMOs is not a unique phenomenon in history [20]. The introduction of innovative products or technologies, including GMOs, is mostly accompanied by uncertainty, such as the unknown risks to human and environmental health, which raise considerable public concern in most countries. A 2007 poll of 1,508 consumers, conducted by the Korea Biosafety Clearing House, showed that 75% of respondents were aware of biotechnology. Of the respondents, 72% and 70% expressed concern that GMOs would be harmful to human and environmental health, respectively. Additionally, 63% of respondents thought that GMOs were greatly beneficial. Only 5% of the respondents had a very positive outlook toward GMOs in terms of acceptance [21].

In the light of Bruce [1], public concern over the potential adverse impacts of GMOs on human health and the environment can no longer be assumed to be a shared value that legitimates the industrial use of GMOs. A positive vision of GMOs, however, can be assumed to be a shared value that legitimizes the industrial use of GMOs. Technologies and products, including biotechnology and GMOs, cannot be separated from the social contexts in which they are introduced [22]. Hence, the possibility of the industrial use of GMOs relies on whether biotechnology, including GMOs, can establish an acceptable position in the sociopolitical landscape [23]. To the public, especially consumers, in a socially constructed system,