Living with casinos: The triple-helix approach, innovative solutions, and big data

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ABSTRACT

With the expansion of the casino industry, especially in Asia, there are growing calls for innovative policy for realizing a net economic benefit while effectively controlling problem gambling. Although the triple-helix framework has been traditionally applied to technological innovation, the concepts of knowledge, innovation and consensus spaces of the triple-helix system have enormous implications for complicated issues related to developing casino policy. A cluster analysis of nine Asian countries/regions suggests that superior universities and industries are necessary but not sufficient for a successful triple-helix system. Capabilities related to networking and interactions among the helices are found to be important for a well-functioning triple-helix system. For consensus-driven policy development in the triple-helix collaboration, we propose big data analysis as a useful tool.

1. Introduction

The casino industry has shown remarkable growth in recent years. While the GDP growth of the OECD countries remained at 1.4% in 2012 and 1.3% in 2013 (OECD, 2014), the casino revenues of the U.S., Macau, and Singapore together recorded an average annual growth of 12% between 2010 and 2013 (Center for Gaming Research Report, 2014). Combined with an explosive phase of Chinese outbound tourism in recent years, the growth of the casino resorts was particularly strong in Asia, where the monopoly of the casino industry was abolished in Macau in 2002, and new casino resorts opened in Singapore in 2010. In 2008, Macau emerged as the largest casino market, exceeding Nevada in terms of the gaming revenue in the world.

The development of so-called integrated resorts (IRs), or mega-resorts that include casinos, is being considered in most countries neighboring China such as Korea, Taiwan, and Japan. The economic impact of the casino industry is said to be substantial. For example, tax revenues from gaming accounted for 86.4% of Macau's total government revenue in 2013, about a 25-percentage-point increase from 61.4% in 2008 (Macau Economic Bulletin, 2014). With the sluggish economic recovery, the development of large-scale resorts has received considerable attention as a solution to revitalize the local economy by attracting tourists and creating jobs. However, having casinos is a double-edged sword for a community. In spite of the economic benefits, casinos, like other forms of gambling, can raise social problems such as gambling addiction, theft, money laundering, and so on. Still, casinos are considered unavoidable, because they enhance financial feasibility, which is

often difficult to meet especially for large-scale projects. For example, it took seven years for Hong Kong Disneyland to generate a profit.

While the goal of the casino industry is to maximize profit, the goal of the government is to maximize net social benefit. Given that casino taxes are in general a fixed percentage of casino revenues, greater casino revenues generate greater tax revenue. Ironically, an expansion of the casino revenue is harmful to the society if it is a consequence of addictive behavior. Thus, the real success of IRs depends on a country's capability to minimize the social costs while realizing the economic benefits. This means that it is important to design effective safeguards to protect the general public from falling into gambling addiction. In doing so, collaborative effort is important between the government and the industry. However, it is not an easy task to develop and implement such policy. Fundamentally, the industry operators are likely to be resistant since they may have to turn down the most loyal players who can bring the highest profits to the casino. In this respect, innovative policy is critically required to promote as well as control casinos in the society based on common consensus among the stakeholders.

The importance of consensus-driven collaboration has been well-established for policy development in the general context (Cairns et al., 2013). For the casino industry, calls for shared consensus, coupled with an urgent need for innovative solutions to deal with problem gambling, suggest that the triple-helix framework of university–industry–government (U–I–G) collaboration, in particular the concepts of knowledge, innovation and consensus spaces (Etzkowitz and Leydesdorff, 2000), has a viable fit as a theoretical foundation.

To date, there has been no study that has applied the triple-helix framework to casino policy. Therefore, as the very first step, the purpose of this exploratory study is to review the triple-helix framework and investigate its relevance in developing innovative casino policy dealing

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with problem gambling behavior. Further, we examine the case of Singapore, which is reportedly running an effective model of casino regulation and protective policy while promoting tourism (Cohen, 2014). We also introduce the situations in South Korea and Japan. Casinos are currently in operation in South Korea, while the Japanese government is contemplating the legalization of casinos as part of a large-scale development of resorts. Through these cases, we describe each country's regulatory system for the casino industry and the implications of triple-helix collaboration. Finally, in order to diagnose the currently available capacity related to establishing the triple-helix system, we perform cluster analysis over nine countries/regions in Asia using the variables suggested in the triple-helix literature. We interpret the clustering results vis-à-vis the characteristics of the casino industry and the regulatory system of each country/region. We further discuss the role of the e-government system for the transparency-enhancing mechanism, which we claim as an underlying infrastructure for the well-functioning triple-helix system.

With regard to casino gambling, often there are contrasting views over policy considerations, intensified by different interests and objectives among different groups. For triple-helix research collaboration, we propose that big data analysis can be a useful tool to discover patterns of casino gambling and attain consensus among the stakeholders. In order to reach this consensus, a large set of data, which is likely to have more testing power with less bias, will be useful for aligning disparate groups toward common goals. To date, there has been no research that applied the triple-helix framework in the context of the casino industry in spite of its value. Thus, by expanding the triple-helix literature to the casino research, we believe that our paper will contribute both practically and academically.

2. Literature review

Triple-helix theory posits that interactions among university, industry, and government are critical to improve technological, institutional, and psychological conditions for innovation in a knowledge-based society (Etzkowitz and de Mello, 2004; Phillips, 2014). The key features of the triple-helix model are the tri-lateral networks and hybrid organizations of university–industry–government (U–I–G), which are highlighted by active interactions among the three entities, as opposed to the "laissez-faire model" (Etzkowitz and Leydesdorff, 2000). In a laissez-faire system, the university provides human capital, the government sets-up regulation, and the industry produces goods and services, all with only limited interaction among the three entities (Etzkowitz, 2008).

The tri-lateral organization of the triple-helix system is where creative synergies emerge and set in motion a process of innovation, creating new venues for interaction. Individual and organizational actors not only perform their own roles, but also supplement the roles of other actors who are weak or under-performing (Etzkowitz and Leydesdorff, 2000; Etzkowitz, 2003). Through this process, the relationships among the institutional spheres of university, industry, and government are constantly reshaped to stimulate innovation (Leydesdorff and Etzkowitz, 1998), bringing forth new technologies, new firms, or new types of relationships in a sustained systemic effort.

For the measurements, triple-helix research has actively employed WSI approaches (Khan and Park, 2011), which refer to webometrics (the study of web-based quantitative methods for social science research (Park, 2010)); scientometrics (the quantitative studies of scientific activities or economic activities (Tague-Sutcliffe, 1992: p.1)), and socialinformatics (quantitative approaches that involve contact with human beings such as survey and interviews, and other qualitative methods such as case studies (Khan and Park, 2011)), among other methods.

The triple-helix system is fundamentally aimed at promoting innovation. While this system has been most frequently used as a technological incubator, the triple-helix model and its indicators have been utilized in a broad range of contexts (for a review, see Chung and Park (2014) and Chung (2014)), including innovation in social policy that handles social events and problems (Cajaiba-Santana, 2014). For example, Danowski and Park (2014) applied triple-helix framework to the Arab Spring movement. Leydesdorff and Etzkowitz (1998) reported a creative way to assist low-income slum residents in Brazil to organize cooperatives which developed low-tech service businesses by linking academic researchers in the industrial relations arm of a university to the industry. In the same vein, Rho (2014) applied a triple-helix model and analyzed the case of a rural development movement for eradicating poverty in South Korea during the 1970s.

As for the functionality of a triple-helix innovation, Etzkowitz (2003) proposed the concepts of knowledge, consensus, and innovation spaces within the triple-helix system. A knowledge space provides research resources for innovative ideas, which contribute to regional development. A consensus space is a venue that draws relevant players from different organizational backgrounds and perspectives to formulate new strategies and ideas to achieve a common goal. An innovation space denotes a new organizational mechanism through which the goal articulated in the consensus space is actually realized. Fig. 1 depicts the three spaces in a diagram with keywords that describe each space and the inter-relations among the spaces, based on Etzkowitz and Ranga (2010).

In particular, with the emergence of the networked society and the era of big data, triple-helix framework is gaining the conceptual and intellectual merits for creating innovation. For the cutting-edge research in this topic, special issues from the Daegu-Gyeongbuk International Social Network Conference (DISC 2013 and 2014) provide an excellent review of literature (Jung and Park, 2014; Lee and Park, 2015; Cho and Chon, 2015).

While there has been no academic research that directly relates the triple-helix framework to casino research, the importance of the collaboration has been recognized in the literature. For example, Blaszczynski et al. (2004: p.313) pointed out that "Coordinated efforts involving all key stakeholders must establish and assure a systematic approach to gambling research, utilizing a common set of standardised definitions and outcome measures, thus enabling valid cross-jurisdictional comparisons and allowing data sharing."

The most concerning side effect of having casinos in the society is problem gambling (Korn and Shaffer, 1999), because other personal and social problems, such as divorce, debt, money laundry, and organized crime emerge as direct or indirect ramifications of individuals' problem gambling. More formally, problem gambling is defined as "the difficulties in limiting the money or time spent on gambling, which can cause harmful consequences to gamblers and others or communities" (Williams et al., 2012: p.5).

Among the various approaches toward problem gambling, the public health framework emphasizes the proactive community-wide prevention measures to be taken prior to the emergence of gambling addiction (Korn and Shaffer, 1999), while the responsible gambling approach regards gambling as an individual's choice which should be based on an informed decision-making process (Blaszczynski et al., 2004). Either way, the inherent conflict between revenue maximization and social welfare puts the government, operators, and the community into different perspectives toward gambling (Smith and Rubenstein, 2009). Thus, the key issue is to bring these diverse players together so that they can have commitment to the issues of the gambling problem, understand the underlying problem gambling through scientific research, and develop consensus-based innovative solutions. Considering the needs for the consensus and commitment among the stakeholders, the triple-helix collaboration, as opposed to the government or industry-driven initiatives, provides a particularly viable fit for generating innovative solution. In the next section, we investigate the case of Singapore, where a triple-helix type organization has been established, and examine how the functionality of consensus, knowledge, and innovation spaces are realized to promote responsible gambling practices.