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## *The Editor's Corner*

With the current Volume 6 the journal continues the phase of improving international visibility. In the past few years, the journal has been listed in three international databases: the International Bibliography of the Social Sciences (IBSS), the EconLit database, the EconPapers database (Research Papers in Economics Database – REPEC), and the Directory of Open Access Journals (DOAJ). On this occasion I would like to thank the members of the editorial team, the readers and all other people who have contributed with their activities, writings and citations to the internationalization of the journal.

The journal continues focusing on transition research and emphasizing openness to different research areas, topics, and methods, as well as the international and interdisciplinary research nature of scholarly articles published in the journal. The current issue covers topics of institutional environments, service recovery, cluster analyzing, advertising characteristics, and online gambling.

This issue starts with a paper written by Yongqiang Gao, who examines the institutional environment of China. In the second paper, Wendy K. T. Gubler, Matthew W. McCarter, Kristie K. W. Seawright, and Yuli Zhang investigate the role of service recovery in Russia and China. In the third paper, Henryk Gurgul and Paweł Majdosz propose the modified diagonalization method for uncovering clusters of sectors within an input-output framework. In the fourth paper, Domen Bajde and Irena Vida examine the influence of ad characteristics on adolescents' attitudes towards antismoking ads on data acquired in Slovenian schools. In the last – fifth paper, Massimo Manzin and Roberto Biloslavo examine online gambling and the characteristics of gamblers in traditional casinos with the relation to online gambling.

Boštjan Antončič  
*Editor*



# *Institutional Environment and MNEs' Strategy in Transitional China*

Yongqiang Gao

MNEs face a complex institutional environment when doing business in the international market. As a result, MNEs adopt strategies to deal with the institutional pressures. However, present studies seldom discuss the institutional environment of a given country, specifically China. Therefore, the strategies that MNEs can use to cope with the institutions in China are far from being discussed. This study contributes to making up this gap. In this study, the identified important institutions in China are Chinese culture, governmental system, and non-governmental organizations (NGOs). They exert coercive and normative pressures on the operations of MNEs. Four strategies can be selected by MNEs to deal with the institutional pressures: guanxi strategy, commitment strategy, competitive strategy and leverage strategy. Guanxi strategy and commitment strategy are commonly used to build good guanxi with Chinese governors and NGOs. Competitive strategy is used when MNEs have high bargaining power against Chinese governments, while leverage strategy is used MNEs in setting conflicts between different institutions or parties to resist the unfavorable pressures from institutions in China.

*Key Words:* China, institutional theory, institutional environment/pressure, multinational enterprise (MNE)

*JEL Classification:* F23

## **Introduction**

Since the openness policy in 1978, China has attracted more and more FDI (foreign direct investment) from all over the world. Rapid economic growth, big market opportunity, and inexhaustible cheap high-quality labor forces have turned China into a paradise of investment. From 2004 on, China receives more than USD 60 billion every year. By 2000, 400 of the 500 most famous MNCs (multinational corporations) had invested in China (Luo 2000). After accession into WTO in 2001, the FDI that flows into China is again accelerated.

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However, after entering into China, MNEs find they confront a very different business environment from their home countries. The business settings in China are different from those in advanced Western countries in many ways. The most salient difference lies in its authoritarian political system, which exerts great influence on business operations and corporations' development (Chen 2004).

Although China is leading a transition of the economic system from a central planning economy into a market-oriented one, government influence is however still overwhelming (Child and Tse 2001). Despite two decades of reforms, officials at various levels of the government in China still have considerable power to approve projects and allocate resources (Walder 1995). As a result, arbitrary intervention from the government remains a constant danger to many firms (Nee 1992; Peng 1997). Therefore, an appreciation of Chinese business management will not be complete unless we carefully examine the complex interactions between businesses and governmental agencies. Successful investing in China requires investors to master a complex political and regulatory environment. Top managers make their important decisions after taking into consideration not only market factors such as customers, competitors and demand, but also the important roles played by various government entities in China (Li and Zhou 2005).

Regretfully, the political environment in China is seldom discussed in academia except for Chinese *guanxi* (Hwang 1987; Xin and Pearce 1996; Yang 1994; Yeung and Tung 1996). Besides, MNEs' strategies and behaviors dealing with the governments in China are far from being discussed either. This paper aims to make up the deficiency by focusing on the interaction between MNEs and the Chinese government.

This paper is organized as follows. The following section briefly reviews the FDI and MNEs received by China in recent years. Then we introduce institutional theory as the theoretical background. The fourth section discusses the political or institutional environment that MNEs have confronted in contemporary China. The fifth section analyzes the MNEs' response to the Chinese political environment. Finally, a conclusion is proposed.

### **FDI and MNEs in China: A Brief Review**

The inflow of FDI or foreign MNEs into China begins from the implementation of the openness policy in 1978. Records documented that, during the 1980s, FDI flows into China increased slowly. But two important

events accelerate the inflow of FDI into China thereafter. One event took place in 1992. In this year, Deng Xiaoping, Chairman of the State at that time, visited southern regions and published 'South Talk'. 'South Talk' ended the uptight disputation 'whether market economy is socialistic or capitalistic' in China, and as a result, most provinces formulated favorable policies to attract FDI and MNEs. Data show that in 1991, the actually used FDI in China is only USD 4.37 billion. But in 1992, the amount arrives at USD 11.01 billion, and to 1993, it even amounts to USD 27.52 billion. The second event takes place in 2001. In this year, China joined in WTO formally, which accelerated the inflow of FDI once again. The number of actually used FDI increased from USD 40.72 billion in 2000 to USD 52.74 billion in 2002. The effect of these two events on the inflow of FDI into China can be seen clearly in figure 1.

Figure 1 illustrates the achievement in using FDI that China achieved in the past two dozen years. In 1983, the FDI that China really used is less than USD 1 billion, but in 2005, China received more than USD 60 billion, which is more than sixty times the number of 1983. In 1991, the FDI that China received only accounts for 2.26 per cent of the global total FDI inflow. But in 2004, the FDI that China received accounts for 9.90 per cent of the global total FDI inflow (United Nations Conference on Trade and Development 2004). Today, China is the largest FDI destination among developing countries and the second largest in the world, following the US.

It is said that the success of China in receiving FDI may be attributed largely to the exhaustible cheap labor forces. But in recent years, the rapid growth of GDP acts as another contributor. With the accompanying increase in people's income, China is becoming a huge market for most commodities and services. For most MNEs, China is a market that they cannot lose.

There are five types of FDI approved by the foreign direct investment policy in China: (1) equity joint ventures, (2) contractual joint ventures, (3) foreign-funded enterprises (so-called WFOEs), (4) share-holding enterprises, and (5) cooperating development (Chen 2004). By the end of June 1997, it was reported that over 200,000 business joint ventures had been registered in China, with a total foreign investment of USD 204 billion (*China Statistics Yearbook 1997*).

In 2000, as many as 400 of the 500 most famous MNCs had made investment in China (Luo 2000). Today, it is said that more than 450 of Fortune 500 companies (listed in year 2004) invest in China. The amount

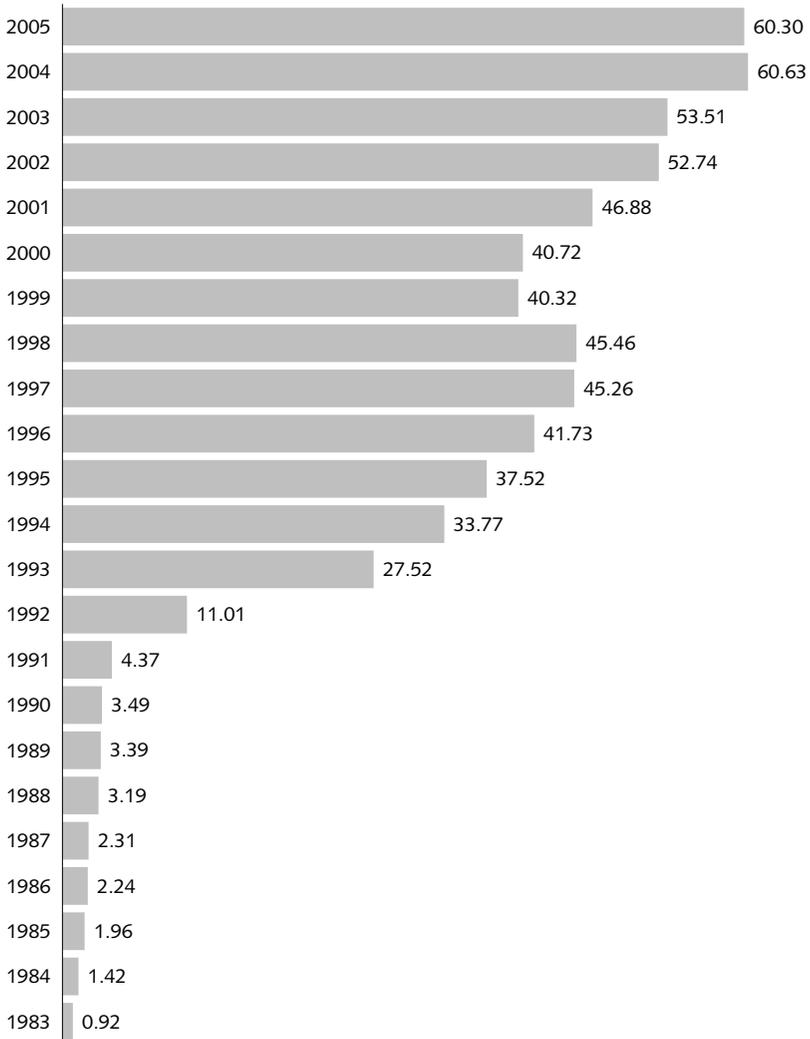


FIGURE 1 FDI inflow into China (in billion US dollars, drawn from the *China Statistics Yearbook* (see <http://www.stats.gov.cn>) for corresponding years)

of MNEs that make investment in China totals 280 thousand, and the actual used foreign capital amounts to USD 600 billion (*China Statistics Yearbook 2005*).

### Theoretical Background: Institutional Theory

Businesses respond to their environment either to develop and exploit opportunities or to react to perceived threats (Andrews 1987). Chan-

dlar (1962) was an early contributor to a long tradition of research on the relationship between environment and strategic behaviour. He suggested that changes in strategy, and in structure, are directly related to changes in the market or in general in the firm - relevant environment. His work has opened the door to the important contingency theory contributions and to a flurry of theories and studies that have confirmed the close relationships between environment, strategy and structure (Lawrence and Lorsch 1967; Thompson 1967; Venkatraman and Prescott 1990).

Different from the contingency theory that focuses mostly on the task environment (Thompson 1967), institutional theory deals with choices made in response to or in compliance with an organization's institutional environment (Bluedorn et al., 1994). Institutional theory, which developed from the behavioural theory of the firm, focuses on the purposeful efforts of individuals to respond to environmental pressures in ways consistent with the institution's rituals and formality and based on values that are important to the institution (Stinchcombe 1997).

Institutions are defined as regulatory structures, governmental agencies, laws, courts, and professions (Scott 1987a, 498). They 'define conditions and set limits for maintaining a stable system; they regulate social relations to maintain conformity with existing value patterns and consistency among these patterns themselves' (Oberman 1993, 215).

The institutional environment comprises the rules and requirements with which organizations must comply to gain the desired rewards of support and legitimacy (DiMaggio and Powell 1983; Meyer and Rowan 1977; Zucker 1988). Institutional theory identifies three types of pressure: coercive-conforming in response to unavoidable requirements, such as regulatory pressure, normative-conforming in response to cultural norms, and mimetic-conforming to meet (mimic) the behaviors of competitors (DiMaggio and Powell 1983).

Institutionalists emphasize that rules, laws and regulations, norms of behaviour, and cultural-cognitive orientations all but determine behaviour more than do contingency and competitive factors (DiMaggio and Powell 1983). Institutional actors include not only the state and the professions, but also interest groups and public opinion (Scott 1987b).

In the search for legitimacy and acceptance, organizations tend to behave in ways that are alike rather than different. Isomorphic behaviour is

therefore seen as widespread, conditioning even strategic behaviour. It is considered essential for organizational success in a complex institutional environment.

In this study, the main institutions that MNEs face in China include unique Chinese culture, the governmental system and non-governmental organizations (NGOs). The corresponding institutional pressures that MNEs confront include coercive pressure from government policies and regulations and normative pressures from Chinese culture and NGOs. MNEs have to develop strategies to deal with the pressures.

### **The Institutional Environment in China**

The typical institutions that MNEs have to cope with are Chinese culture, governmental system and NGOs. The characteristics of these institutions are introduced in this section.

#### THE CONFUCIANISM CULTURE

Chinese traditional culture is also called Confucianism, due to the influence of Chinese sage Confucius (ca. 551–479 BC). Confucianism is not a religion but a set of guidelines for proper behavior (Hofstede 1991; Tu 1998b). Confucianism has shaped the social interaction of people in eastern and southeastern Asian countries for more than 2000 years (De Bary 1991; Slote and DeVos 1998; Tu 1998a; 1998b). Recent economic miracles in Hong Kong, Singapore, Taiwan, and other southeastern Asian countries have aroused interest in Confucianism (Yan and Sorenson 2006).

The most outstanding characteristic of Confucianism culture is *guanxi* (relationship). Confucianism considers people as a part of the social network. The whole society is just a huge network in which a person plays different roles. In general, Confucianism uses five virtues to define the relationship between individuals (Tu 1998a). The five virtues are humanity/benevolence (*ren*), righteousness (*yi*), propriety (*li*), wisdom (*zhi*), and trustworthiness (*xin*). Five basic social relationships are also defined: father and son, ruler and ruled, husband and wife, elder brother younger brother, and friend and friend (Tu 1998c; Xing 1995).

As a result of Confucianism culture, the legal system of China is relatively weak, while ‘*guanxi*’ among individuals is very strong. It is well known that the Chinese are enthusiastic in building *guanxi* with others. Business often takes place between two parties that are connected with each other. The importance of *guanxi* in China is well recognized

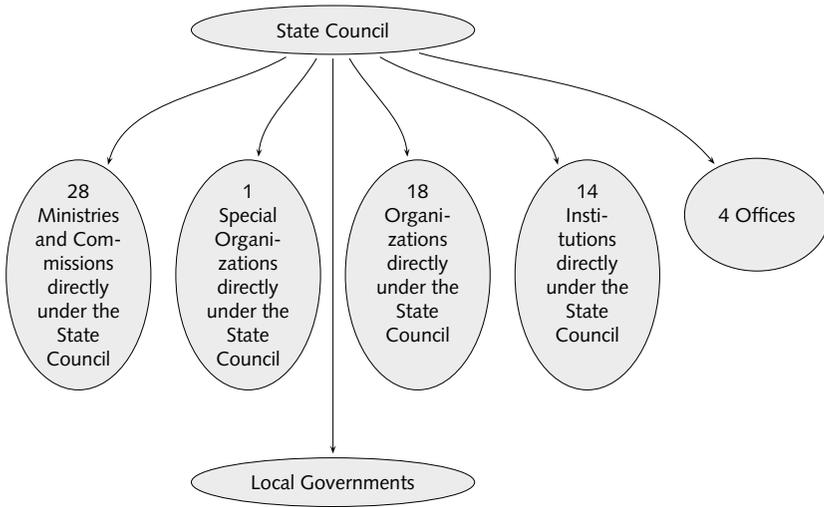


FIGURE 2 The Structure of Chinese Governments (adapted from *Bulletin of State Council*, 30 April 2003)

by many scholars (Leung and Yeung 1995; Tsang 1998; Xin and Pearce 1996).

Culture as an institution exerts normative pressure on MNEs, which requires MNEs to recognize the cultural differences between home and host country and respect the host country's culture. Business operations should comply with the norms and values embedded in the host culture.

#### THE GOVERNMENTAL SYSTEM

The governments in China can generally be divided into two levels: the central government and the local governments. The central government includes the State Council and its directly controlled organizations. Local government can further be divided into provincial, municipal, county and township governments. The structure of Chinese government institutions is illustrated in figure 2.

Many organizations are authorized by State Council to formulate policies and regulations aiming at MNEs. For instance, the National Development and Reform Commission (NDRC) is authorized to issue the 'Catalogue for the Guidance of Foreign Investment Industries', and the State Administration of Taxation (SAT) is authorized to formulate preferential tax policies about FDI, and the like.

As far as business is concerned, Chinese governments show the following characteristics:

1. Extensive government intervention in economic affairs. It is said that in the 1990s, to get government approval, a typical major construction project experienced checks by 7 ministries, 8 examining and approval bureaux, and had 58 red stamps and 169 officials' signatures, and this process lasted two years (Tian et al. forthcoming). After the implementation of 'Administrative Approval Law', there are still 500 items/projects need to be approved by the related government agencies. Procedures to acquire official approval are very time-consuming (Holtbrugge and Berg 2004) and costly.
2. China is a country with a decentralized government structure. National laws are often only broadly drafted at the central level and their implementation is left to the discretion of regional and local administrations (Holtbrugge and Berg 2004). The decentralized government structure gives provincial and local governments the freedom to intervene in economic activities. 'In this context any prominent administrator is in a position to give a go-ahead to an exception and can find out a suitable reason for it, such as to relieve rural poverty, to reduce losses incurred by a state-owned firm, or to defuse disturbances among a group of employees' (Blackman 2000).
3. There are conflicts among different administrators. Firstly, since local governments face different primary interests from the central government, it is inevitable that there is conflict between local governments and the central government. Conflict among different levels of authority arises for the following reasons: (a) inconsistent interpretations of laws and regulations, (b) different political priorities of economic issues, and (c) various stakes acquired from MNEs (Chen 2004). Besides, the division of jurisdiction among different ministries is not very clear in China. As a result, different ministries often issue conflicting regulations.

Government acts as a coercive pressure on MNEs. MNEs are not only demanded to abide by the policies and regulations issued by government, but also to meet the expectations of government, such as large scale of investment, transferring high technologies or management skill, and so on.

#### THE NGOS

The rising influence of non-governmental organizations (NGOs) is one of the most significant developments in international affairs over the past 20 years. The emergence of NGOs seeking to promote more ethical and socially responsible business practices is beginning to cause substantial changes in corporate management, strategy, and governance (Doh and Teegen 2003).

There are about 800,000 NGOs in China, including media, charities such as China Charity Federation (CCF), China Welfare Fund for the Handicapped (CWFH), China Foundation for Poverty Alleviation (CFPA) and China Youth Development Foundation (CYDF), trade unions, and other NGOs such as All-China Association of Industry and Commerce (ACAIC), All-China Women's Federation (ACWF), All-China Federation of Trade Unions (ACFTU) and All-China Youth Federation (ACYF), etc.

Among the NGOs, the media play an outstanding and increasingly important role. They can lead public opinion, which in turn imposes on business operations. However, the media and other NGOs are controlled by the governments in China. Although the media can comment on and criticize the misconduct of businesses or even governments, the underlying rule is that if a conduct or business is approved by the governments, the media within the jurisdiction of the governments should not say 'no' (Gao 2007). To understand this point is critical for businesses dealing with NGOs in China.

NGOs bring normative pressure to bear on MNEs. MNEs are expected to do business in China ethically. They are also expected by the NGOs to give a helping hand in settling down laid-off workforce, providing charitable donations, improving the community's medical and sanitary conditions, and the like (Gao 2007).

#### **MNEs' Strategies towards the Institutional Environment**

Facing institutional pressures, some firms adapt themselves to the pressures passively, while more firms respond to the pressures proactively, by taking into account both their resources and the strength of the institutions involved. Oliver (1991) has suggested five strategies that could be used by MNEs: acquiescence, compromise, avoidance, defiance, and manipulation. Although the typology of Oliver (1991) is widely used in

academia, here we would like to provide another typology. We think if MNEs want to strive for a favourable institutional environment or to deal with the unfavourable institutional pressures in China, four strategies are recommended: guanxi strategy, commitment strategy, competitive strategy and leverage strategy.

#### GUANXI (RELATIONSHIP) STRATEGY

Confucianism culture indicates that a guanxi strategy is the most important strategy for doing business in China. Guanxi generally refers to relationships or social connections based on mutual interests and benefits (Yang 1994). It is a way for MNEs to adapt to the institutional environment and to obtain scarce resources such as legitimacy and approval in China.

How to build social and business guanxi in China is the core problem for MNEs. Present literature on guanxi has shed light on the ways to build guanxi in China (Fock and Woo 1998; Pearce and Robinson 2000; Yeung and Tung, 1996). Put simply, as Gao and Tian (2006) and others identified, the frequently used ways to build guanxi with Chinese government officials are gift-giving and money-giving, inviteing officials to banquet, visiting officials frequently, paid travel, honoraria for speaking, inviteing officials to inspect workshops, personal help, and so on.

The main difficulty in adopting a guanxi strategy lies in its ethics. To build guanxi often means to give a gift, as Yeung and Tung (1996) identified, gift giving is one of approaches to build a guanxi (relationship) in China. Although formal gift-giving is different from bribery in China (Steidlmeier 1999), it is very difficult to identify an ethical gift-giving from an unethical gift-giving or bribery. Just as Steidlmeier (1999) noted, 'from an ethical perspective, it is very difficult to know when it is proper to give or receive a gift, what sort of gift is appropriate, or what social obligations gift giving imposes.' Therefore, MNEs should be careful in adopting a guanxi strategy.

#### COMMITMENT STRATEGY

Commitment can be taken as a tool to build good relationships between MNEs and the Chinese governments. However, as we discussed previously, since Chinese governments and NGOs have expectations regarding MNEs, the latter can meet the expectations by 'commitment'. Commitment strategy can help MNEs to build a favorable institutional environment even though they do not have guanxi with governmental officials.

Hung's study (2002) of MNCs in China showed that, after 20 years of economic development, commitment is still the strongest element for demonstrating multinationals' determination to do business in China and an incentive to gain the support of the Chinese government. MNEs have demonstrated four ways of showing their commitment to the Chinese authorities. The first is to increase their investments in China. The second is to use their advanced technologies and management techniques for the betterment of Chinese society, and the third is to devote themselves to communities and social affairs, such as donations and participating in the Project of Hope for poor children's education in the rural areas. The last approach is to localize multinationals' practices in China by hiring and training Chinese employees (Chen 2004).

#### COMPETITIVE STRATEGY

When an MNE has high bargaining power against Chinese governments due to its substantive capital and advanced technologies, it can adopt a competitive strategy. A competitive strategy means that MNEs can bargain with the Chinese government. It can be seen as an action taken by MNEs to reduce institutional uncertainty and ensure the resource supply in China.

To take a competitive strategy, the first step is to identify and evaluate the bargaining power of MNEs against the Chinese government. If an MNE's bargaining power is low, then a coalition may be built or the collective organizations such as Chamber of Commerce are utilized.

A good example is the coalition of 54 foreign companies in China to bargain with the State Council of China. When they heard that the Chinese government wants to integrate income tax for domestic and foreign companies (foreign companies enjoy revenue alleviation in China since 1978, the income tax rate for domestic firms is 33%, while for foreign companies it is 15%) and to increase the income tax rate of foreign companies in 2004, 54 foreign companies built a temporary coalition. The coalition formulated a report named 'Some opinions on the new income tax law for enterprises from foreign companies in China' and, in January 2005, sent it to the Legal System Office of State Council of China, Ministry of Finance, Ministry of Commerce and State Administration of Taxation. The report requests the Chinese government to give a 5–10 year transitional period and hopes that the Chinese government will provide a 'reasonable and competitive' income tax rate for MNEs. The collective action of foreign companies obstructs successfully

the integration of income tax for domestic and foreign companies (Gao 2008).

Beside the contemporary coalitions, some permanent coalition of MNEs have emerged in China, for example, the US Chamber of Commerce and European Chamber of Commerce.

#### LEVERAGE STRATEGY

Leverage strategy refers to using one part to beat another part. MNEs have three ways to take a leverage strategy. The first is making use of the local government to resist the influence of central government, or one Ministry to beat another. The second is making use of home government in bargaining with the Chinese government. The third is making use of international institutions such as WTO to resist the Chinese government (Gao 2008).

At first, China is a country with a decentralized government structure (Holtbrugge and Berg 2004). The decentralized government structure gives local governments the freedom to intervene in economic activities to some extent. Since local governments face different primary interests from the central government, it is inevitable that there is conflict between local governments and the central government. Conflict among different levels of authority arises for the following reasons: (1) inconsistent interpretations of laws and regulations, (2) different political priorities of economic issues, and (3) various stakes acquired from MNEs (Chen 2004). In addition, the division of jurisdiction among different Ministries is not very clear in China. As a result, different Ministries often issue conflicting regulations. As a consequence, many MNEs influence Chinese business policies toward their preferred directions by gaining support from their governmental partners or by leveraging one governmental unit against another. For example, the Tianjin Technological and Industrial Development Zone Authority (TIDZA) completely supported its biggest client, Motorola China, and challenged Beijing in a number of regulations to assist Motorola in becoming a member of the zone (Post et al. 2002).

Secondly, some MNEs ask home government for help in bargaining with the Chinese government. Through negotiations of bilateral agreements, MNEs are empowered to affect Chinese policies or regulations as a whole nation. This gives MNEs more power by changing the political structure wherein negotiations take place from state-to-state rather than state-to-firms. In addition, putting the business issues at an international

level allows foreign firms with hegemonic states as home countries to affect China's decisions through the operation of international organizations (Chen 2004). Amway China applied this strategy when dealing with the Chinese ban on direct selling in 1998.

Thirdly, after China joined the WTO in 2001, some MNEs begin to use the rules of WTO to influence the decision-making of the Chinese government. Petras (2000) argued that China's integration into global markets through WTO membership produces a greater subordination to the USA, based on its aggressive economic, military and political power inherent in the international system. He argued that by further lowering barriers of foreign business operation and trade as required by the WTO, the USA gains strategic advantages and US-based MNEs obtain access to China's financial sector, agricultural market and high-tech consumers. Pearson's analysis (2000) of China's accession to GATT/WTO found four significant driving forces in the formation of Chinese foreign trade policy: elite preference, pluralization of domestic actors, external influences and public opinion. As to the external influences, Pearson (2000) argued that international pressure originated from international leadership seeking to force China into an existing international market and system in order to be able to regulate and monitor its actions. She further pointed out that the most decisive international influence is to learn from norms and beliefs applied in international regimes.

### **Conclusion**

China, as a huge market and the supplier of exhaustible cheap qualified work forces in the world, has attracted more and more MNEs. However, China is a very different market from the West's due to her unique institutional environment. This paper acts as an endeavour to discuss the institutional environment, especially the political environment in China and the responses of MNEs.

The main institutions in China are Chinese culture, governmental system and NGOs. They exert either coercive pressure or normative pressure on MNEs. In dealing with the institutions, MNEs can take four strategies: *guanxi* strategy, commitment strategy, competitive strategy and leverage strategy. The *guanxi* strategy and commitment strategy aim at building good *guanxi* with governments. Competitive strategy is used when an MNE has bargaining power or can gather bargaining power by collection against the Chinese government. MNEs have three ways to take a leverage strategy: (1) Making use of the local government to resist the influence of

central government, or one Ministry to beat another; (2) Making use of home government in bargaining with the Chinese government; (3) Making use of international institutions such as WTO to resist the Chinese government.

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# *Service Recovery in Transition Economies: Russia and China*

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While processes for transition from planned to market economy vary, there is one common outcome from the transition process – more discriminating customers. Growing customer expectations increase the possibility of failing to meet those expectations. In competitive market economies service failures are accompanied by new consequences of lost customer loyalty. These potential losses to service providers that can result from service failures necessitate the implementation of service recovery. In this study researchers investigated the role of service recovery in two major economies that are currently in transition from a planned to a market economy: Russia and China. Four recovery systems were examined within the context of two levels of service failure criticality. Service recovery system design was found to matter in customer recovery in both Russia and China, but Chinese respondents reported higher levels of recovery success. Interaction effects also suggest that the common experience of transition from planned to market economy did not produce exactly the same response to service recovery efforts.

*Key Words:* economies in transition, cross-cultural customer perceptions, empirical research, service recovery

*JEL Classification:* F23, L80

## **Introduction**

Free market economies are driven by customer needs and interests. In contrast, firms in command economies concentrate on producing man-

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dated quantities of goods and services that are specified by central planners. Because customer needs are not always the primary focus of central planners, customer expectations for service quality are minimized.

All economies in transition to market systems face some common elements of marketization. Service firms in such economies must alter their focus from expected output quantity to include market demanded output quality in order to meet intensifying customer demands.

Rising customer expectations will be accompanied by increased consequences for service failures. Growing competition should amplify the need for service firms to address these failures, providing appropriate remedies to recover the loyalty of failed customers. The transition to a market-based economy is expected to include design of service delivery systems that provide service recovery.

The purpose of this research is to examine the role of service recovery in two major economies that are in transition from planned to market economies: Russia and China. This research answers two important questions: (1) do recovery efforts make a difference in retaining customer satisfaction and loyalty as market forces grow in importance in these countries, and (2) do service criticality and/or nationality influence service recovery success? The first section of this article presents background on the process of transition from a planned to a market economy, followed by a discussion of service recovery research. An examination of service recovery in the Chinese and Russian economies includes a look at the service sectors in those countries. The research methodology and results of data analysis are then explained. The article concludes with a discussion of the results, including implications for research and practice.

### **Transition From Planned to Market Economy**

The focal point of firms operating in planned economies differs dramatically from that of firms in market systems. The firm in a planned economy must satisfy the demands of central planners, while the market-driven firm must satisfy needs of customers. Thus, transition of the macroeconomy requires the microeconomic transition of the focus of providers of goods and services.

#### PLANNED ECONOMIES

In command economies, firms focus on production of a specific amount of goods or services that are sold at pre-established prices (Golden et al. 1994). These prices and quantities are generally fixed by central plan-

ners (Chikan and Demeter 1995). Thus, in planned economies, output quantity generally exceeds output quality in importance. Customer satisfaction is not a primary decision criterion in service and production planning.

The planned economies in both China and Russia were dominated by large firms that produced few consumer goods and services (McMillan and Woodruff 2002). Customer (especially consumer) information rarely found its way into planning decisions. Even though customer needs were not addressed, scarcity of supply created an environment of excess demand. The limited assortment of outputs encouraged customers to buy what was available rather than what was desired.

Service failures occur when customer needs and desires are not met. In the planned economies of Russia and China customers – especially consumers – regularly experienced disappointment in their efforts to obtain high-quality goods and services. But these service failures did not result in severe negative consequences for the producing or selling companies; thus, service providers rarely perceived a need to rectify the failure.

#### TRANSITION TO A MARKET ECONOMY

All transitions from planned to market economies go through three generic steps (Gungor and Yamak 2002). These steps include (1) political and civic reform, (2) legal reform, and (3) economic liberalization. While political and legal reforms are essential to economic transition, they tend to take place at the macro level. Economic reform is also implemented at the micro level as firms begin to focus on customer interests to achieve market survival (Golden et al. 1994). These changes in the microeconomic sphere are often prompted by political and legal adjustments. For instance, profit incentives are encouraged by decreased government subsidies (Fogel and Zapalski 2001). However, managers in firms make the decisions that lead to marketplace success.

While all transition economies go through similar transition processes, implementation of each step varies (Mueller and Goic 2002; Fogel and Zapalska 2001). In Russia markets opened rapidly. This transition method created a setting where increased imports quickly decreased demand for locally produced goods. Hyperinflation was accompanied by expropriation of profits through official and entrepreneurial corruption. In contrast, China experienced state planned and controlled privatization and foreign direct investment (FDI) to minimize negative social costs. A small- to medium-size enterprise sector also emerged as rural businesses run by local governments supplemented FDI and imports.

Regardless of the transition implementation process, there is one common outcome from the transition process: more discriminating customers. Increased supply – especially of consumer goods – brings increased customer expectations and demands. Firms providing quality products that exhibit reliability and durability, combined with high levels of customer service, become the marketplace survivors as competition increases (Golden et al. 1994).

Growing customer expectations increase the consequences of service failures for service providers. A marketplace-orientated manager who actively focuses on customer interests will realize that rising customer expectations increase the possibility of failing to meet those expectations. As competition intensifies in transition economies, the need to retain customer satisfaction and loyalty becomes apparent to service providers. Thus, the increased costs of lost customers due to service failures necessitate implementation of service recovery.

### **Service Recovery Research**

In service industries, service failures unavoidably occur (Boshoff 1997). Such failures vary in consistency and severity depending on the situation, service, and stakeholders. Accepting this truth, service providers use service recovery systems to intercept and amend service failures, and to retain previously dissatisfied customers. Aside from retaining dissatisfied customers for future business, effective service recovery minimizes potential future losses of negative word-of-mouth to current and potential customers (Forrester and Maute 2001; Rondeau 1994). Service recovery, therefore, is vital to successful service systems.

Since service recovery scholarship was first introduced into academic circles, scholars have found conflicting results in efforts to discern how to achieve effective service recovery performance (Boshoff and Leong 1998; Johnston and Fern 1999; Ranaweera and Prabhu 2003). Variations in service recovery system design, customer perception of service criticality, and research design may explain some of the discrepancies in reported research results.

#### **SERVICE RECOVERY DESIGN: PSYCHOLOGICAL AND TANGIBLE ELEMENTS**

Service providers use a combination of two types of system elements in recovery strategy: tangible and psychological (Miller et al. 2000; Schweikhart et al. 1993). Psychological actions employed in service re-

covery efforts are verbal and emotional responses to service failure that appease dissatisfied customers (Carson and Carson 1998). Such actions typically entail apologizing for the failure and expressing empathy (Bell and Ridge 1992; Zemke 1994). Tangible actions involve physical steps that appease dissatisfied customers for real and perceived damages (Bell and Ridge 1992; Carson and Carson 1998; Chebat and Slusarczyk 2005; Zemke 1994). Service firms may complete the service contract correctly or cover the costs incurred by the customer (Clark et al. 1992; Hoffman et al. 1995).

Some post-failure costs incurred by customers are psychological rather than economic. Lost time, concern, and inconvenience are among the sacrifices experienced by failed customers. Providing compensation for these psychological costs by offering payments that exceed customers' out-of-pocket losses can increase recovery success. This act of covering psychological costs – termed value-added atonement – has been shown to be effective in increasing customer satisfaction and loyalty (Hocutt, Bowers, and Donovan 2006).

#### SERVICE CRITICALITY

In addition to psychological and tangible elements of recovery design, criticality impacts the effectiveness of the recovery efforts (Levesque and McDougall 2000). Criticality is defined as how important the service is to the customer (Ostrom and Iacobucci 1995). This importance may be due to cost, sacrifices to obtain the service or caused by failure, customer need for the service, or any number of issues that deepen the customer's perception of a service's importance. The more involved the customer is in obtaining the service, the more critical or severe the impact that a service failure has on that customer's service recovery expectations (Hoffman and Kelley 2000).

A high potential for customer dissatisfaction comes with failures in high-criticality service (Verma 2001). Although the cost to compensate dissatisfied customers varies from situation to situation (Miller et al. 2000), the criticality of the failed service is found to influence the customer's recovery expectations (Bitner et al. 1990; Hoffman et al. 1995; Hoffman and Kelley 2000).

#### UTILIZED RESEARCH METHODOLOGIES

There is a wide array of approaches available to researchers studying service recovery. Many empirical studies thus far have used an ex-post facto

survey method called critical incident technique (Stauss 1993). CIT is a powerful tool because information regarding both the server's and the customer's perceptions of the service encounter is obtained via qualitative surveys (Bitner et al. 1990; 1994; Chung and Hoffman 1998). This methodology has been used to establish many of the key constructs in service recovery research.

However, Johnston (1995) suggests that CIT is limited in two aspects: (1) survey respondents' perceptions of the service failure may be reshaped due to an extended lapse of time between the failure and the research report, and (2) respondents commonly report extreme service failures, thus skewing collected data. Regardless of these challenges, the richness of CIT has been very effective in establishing the foundation of service recovery research.

Other empirical research methodologies that control and manipulate some of the important intervening variables can allow for testing of hypotheses. In recent years, scholars have begun using written scenarios as the treatments in service recovery research based upon controlled experimental design (Bitner 1990; Larsen 1987; Maxham 2001; Ogden and Turner 1997). These scenarios can control the design of the service failure, recovery effort, and potentially confounding variables – such as criticality. After research subjects read the failure and recovery scenarios, they provide data on their responses – primarily satisfaction and loyalty – as a measure of recovery effectiveness. Extension of these studies can assist in the exploration of service recovery efforts in countries in transition from planned to market economies.

### **Russia and China**

Service industries are becoming more global in operations (Dicken 1991; McLaughlin and Fitzsimmons 1996), and becoming a large and growing portion of the Gross Domestic Product (GDP) for many developing and developed economies (Zhu et al. 2004). The expansion of service firms across national borders (Patterson and Cicic 1995) and the growth of service sectors of most economies have led to greater emphasis on service system design – especially for emerging markets (Bartlett and Ghoshal 2003; Thompson et al. 1998).

The majority of the current service recovery literature analyzes process design through western perspectives (Aaker and Maheswaran 1997; Donthu and Yoo 1998; Maheswaran and Shavitt 2000). Yet, countries in transition to a market economy exhibit a growing focus on customer needs in

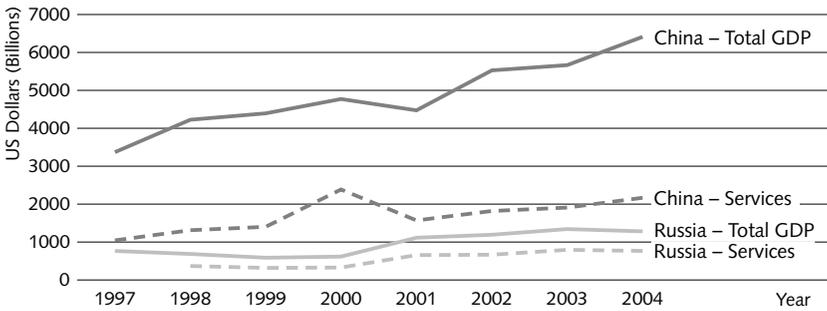


FIGURE 1 Gross domestic product in Russia and China (*World facts book* 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004)

service delivery (Chikan and Demeter 1995). Therefore, these countries should be of particular interest to service recovery researchers. The two largest economies in transition from a planned to a market economy are Russia and China.

#### SERVICE SECTORS IN RUSSIA AND CHINA

The Federal Republic of Russia and The People's Republic of China are two emerging economies that fit this model of economic system transition. Russia's service industries represent an average of 55.83% of GDP over a recent nine-year period for an average estimate of US\$ 523 billion (figure 1). The transition of the Russian economy has accelerated quickly since the collapse of the Soviet Union in 1991. In contrast, economic transition in China has been more gradual. Although China's service sector has only averaged 32.61% of GDP over the same nine-year timeframe, the value of the sector represents an average estimate of US\$ 1.63 trillion (figure 1).

As demand for Russian and Chinese services increase, so will service competitors from within and outside the nations' boundaries. Because service recovery is an essential part of the service delivery system, managers must understand the needs and expectations (Bartlett and Ghoshal 2003) in these new market economies.

#### SERVICE RECOVERY IN RUSSIA AND CHINA

Since service delivery design research rarely examines issues in transition economies, it is no surprise that studies of service recovery are lacking in Russia and China. Thus, this research was initiated based upon findings in Western research; this study is needed to determine if previ-

ous findings would apply to these newly-marketizing countries. The first two research propositions suggest that consumers in Russia and China will recognize the role of service recovery system design and criticality as established in Western research studies. Once that is established, an examination of potential differences between consumers in Russia and China is studied in Research Proposition 3. Also examined are the interaction effects between sets of variables in this study.

#### *Service Recovery Design*

Service recovery systems vary across companies and industries. A recent research observation suggests that effective service recovery design should be affected by the unique needs and expectations of the customer (Goldstein et al. 2002). As customer expectations increase in transition economies, service recovery design should grow in importance. Thus, varying the combinations of recovery elements should affect the success of the service recovery effort in Russia and China. As service recovery efforts increase through additional psychological and tangible elements, service recovery success is expected to improve, regardless of the level of criticality of the primary service or nationality of the consumers.

RESEARCH PROPOSITION 1 *Increased service recovery efforts will result in increased customer recovery success.*

#### *Service Criticality*

In service encounters, customers have different expectations in relation to the service's criticality (Webster and Sundaram 1998). A service that is highly critical typically is more likely to have customers that see a service failure as more serious (Ostrom and Iacobucci 1995). This is expected to become important in transition economies. We expect that increases in service criticality will be accompanied by decreased service recovery effectiveness, regardless of recovery system design or nationality of the consumer.

RESEARCH PROPOSITION 2 *Service recovery success will decrease as service criticality increases.*

#### *Nationality of the Respondents*

Consumers in both Russia and China have experienced economies in which customer needs and desires were not primary considerations in service delivery. As these economies transition from planned to market economies, customer expectations increase. Yet, the differences in

implementation of economic transition to market systems may contribute to dissimilar evolutions of customer expectations. Variations in national environments – such as political climates, economic stability, and cultural tendencies – may also influence the perceptions of consumers. These differences may shape expectations that lead to variations in customer satisfaction and loyalty with service encounters and recovery efforts. The third research proposal captures these issues and recognizes no a priori expectation for direction of the hypothesized differences:

RESEARCH PROPOSITION 3 *Service recovery success differs according to the nationality of consumers.*

#### *Interaction of Variables*

The literature suggests that recovery system design, service criticality, and consumer nationality influence the effectiveness of service recovery efforts. Because service criticality and consumer national origin have in some studies been found to impact recovery effectiveness, there is reason to suspect that they may interact with the service recovery system design to impact effectiveness of the recovery effort. Thus, the fourth and fifth research propositions are stated as follows:

RESEARCH PROPOSITION 4 *Level of service criticality interacts with service recovery design in recovering customer satisfaction and loyalty following a service failure.*

RESEARCH PROPOSITION 5 *Nationality interacts with service recovery design in recovering customer satisfaction and loyalty following a service failure.*

Since national environment and service criticality are expected to influence customer expectations regarding service recovery design, it is possible that these two variables influence each other. As the fourth and fifth hypotheses examine the interaction of criticality and nationality with service recovery design, it is important to determine if these variables interact. This suggestion is captured in the sixth research proposal:

RESEARCH PROPOSITION 6 *Service criticality and consumer nationality interact when examining service recovery success.*

#### **Research Methodology and Results**

Data were collected via a paper and pencil survey instrument that presented respondents with a service failure and a recovery scenario, followed by questions that evaluated the success of the recovery effort. The

TABLE 1 Establishment of Criticality levels

Criticality	Purchased item	Cost	Performance expectation	Inconvenience
Low	Clothing (trousers)	Low	Will wear the item for a short to medium length of time.	Travel to the store, exchange the item, return home.
High	Electronics (television)	High	Will use the item for an extended period of time.	Must arrange for transportation to the retailer, leave the television for several days and arrange for return transportation to retrieve the television set. This is an item that cannot be transported on public transportation.

first step in this research process was the selection of the scripted service and the variations in criticality and recovery system design of that service. We decided to study a consumer-oriented service to best align this study with previous research in the field of service recovery. Since both countries in this study – Russia and China – are extremely large, with numerous regional cultures and environments, the populations were limited to one major city in each country: Tianjin, China and St. Petersburg, Russia.

#### DESIGN OF SERVICE FAILURE SCENARIOS

To identify a consumer service that is common in both countries, with similarities in criticality levels, we formed a focus group with participants that were native to the selected regions of China and Russia. In a one-hour meeting the group identified retail sales as a service that was common in both environments. They also identified two products that would be sold by different retail service providers in their countries: (1) clothing (a pair of trousers) and (2) electronics (a television set). These items were identified as merchandise that consumers could realistically purchase, but that were perceived as different levels of criticality. Table 1 presents information developed by focus group members that explains the importance of the two products that led to identification of these scenarios as low and high criticality.

Criticality levels in the experiment are categorized in four ways: (1) the purchasing cost for the customer, (2) the customer's expectation of the product's performance, and (3) the customer's inconvenience of notify-

ing the service provider of the failure. The focus group considered the purchase of trousers to be of low criticality due to the frequent purchase of clothing, low monetary cost, and expectation of wearing the clothing item for a relatively short period of time. To replace the trousers typically takes an hour or two to travel to the store, exchange the item, and return home. The television purchase, in contrast, was considered to be of high criticality because it is a less frequent purchase, has a relatively high monetary cost, and there is an expectation of service performance over many years. To repair a television may take several days; thus inconvenience was considered higher. Contributing to the inconvenience is the common use of public transportation by many consumers. It is far easier to return a clothing item to a retailer than to transport a television set, especially for those using public transportation.

Focus group participants highlighted increasing awareness of customer needs in the new assumption that faulty products could be returned to the retailer. The planned economic systems of these countries often supported the adage of 'buyer beware'. Consumers seldom expected retailers to replace or repair defective merchandise. This report supports the assumption that customer experience precluded expectations of appropriate service delivery – at least in retail services.

#### SERVICE RECOVERY DESIGN TREATMENTS

This research is designed based upon scenario descriptions of scripted service failure and recovery activities. All experimental treatment scenarios designed for this study began with a service failure. Two retail failure scenarios were scripted to reflect the focus group's identification of a common failure for each product: (1) the zipper is broken on the trousers, and (2) the television set malfunctions. These failure scenarios reflect the two levels of criticality that were identified in the focus group.

Once the failure scenarios were scripted, the scenarios relating variations in service recovery system design were prepared according to recommendations from focus group participants. These participants suggested that a typical recovery scenario experienced during times of the planned economy would include no recovery effort accompanied by service provider belligerence. They also described typical scenarios as (1) psychological elements with no tangible recovery effort and (2) tangible recovery effort with no psychological effort. The psychological elements were defined as honest, respectful communication with the customer. Tangible activities were defined as compensating the customer for their

TABLE 2 Service recovery design: description of the treatments

Recovery design	Treatment			
	(1)	(2)	(3)	(4)
Psychological	–	0	+	+
Tangible	0	0	+	+
Value-added atonement	0	0	0	+

NOTES Column headings are as follows: (1) no recovery effort, with belligerence, (2) no recovery effort, (3) standard recovery effort, (4) value-added atonement recovery effort.

loss through replacement of the defective item. These scenarios constituted the experimental treatments administered to the research subjects.

An additional treatment that included valued-added atonement (15% return of the defective item's price) was also scripted. This scenario was suggested to focus group members; all participants agreed that this was a scenario that exceeded their expectations.

Through the vehicle of the written scenario treatments, the customer communicated the failure to the service provider. The customer then received one of the following recovery treatments:

**TREATMENT 1** The service provider responds negatively to the customer and provides no tangible recovery.

**TREATMENT 2** The service provider does not take any psychological or tangible recovery action toward the customer.

**TREATMENT 3** The service provider enacts a standard recovery effort that provides both psychological and tangible recovery elements: acknowledging the service failure (psychological), then offering to replace the product (tangible).

**TREATMENT 4** The service provider acknowledges the service failure (psychological), offers to replace the product (tangible), and finally offers a 15% discount on the item (value-added atonement).

These service recovery elements that constituted each of the treatments are summarized in table 2.

### **Measurement of service recovery success**

For this study the dependent variable is service recovery effectiveness or success. Since the purpose of service recovery is the recapture or maintenance of customer satisfaction and loyalty following a service failure (Hart et al. 1990), we developed a composite measure of the service re-

covery success construct by evaluating customers' post-recovery satisfaction and loyalty.

Two questions each were designed to measure customer satisfaction and loyalty (Reichheld 2001; Zeithaml et al. 1990). These questions provided a five-point scale for participant response. Satisfaction was measured as: (1) an assessment of how the service performance aligned with customer expectations, and (2) a respondent rating of the service quality. Participants provided their perceptions of their own loyalty in response to questions assessing: (1) likelihood of repeat patronization of the business, and (2) probability of recommending this business to another.

Once the service failure scenarios, recovery treatment scenarios, and post-treatment questions were written, the materials were translated and back-translated into Chinese and Russian. Native speakers of the two languages, working closely with one of the researchers to discuss meaning in all of the text, translated the materials into the target languages. Then, native English speakers that are fluent in Chinese and Russian translated the Russian and Chinese translations back to English. Both translators then met with one of the researchers to adjust any translation discrepancies to best reflect the original meaning of the work.

#### DATA COLLECTION

Given the difficulty of identifying populations and accessing sampling frames for probability samples in social science research (Pedhazur and Schmelkin 1991), we used a purposeful sampling approach. Trained professionals – a university professor in Tianjin, China and an instructor with research training in St. Petersburg, Russia – thoughtfully selected potential respondents. Consumers in major marketplace locations throughout the cities were approached to request their participation in the study. The survey reading materials and response instrument were kept simple and short to encourage the resulting participation rate that was in excess of 80 percent.

Once subjects agreed to participate in the research they were randomly assigned to a group representing a failure scenario and a subsequent recovery treatment scenario. This quasi-experimental research design obviously does not allow for random assignment of nationality; yet, the random assignment of subjects to treatment groups helps eliminate some spurious interpretations that can result from personal variation in participants. The demographics of the research subjects are presented in table 3.

TABLE 3 Demographics of subjects

	Tianjin, China	St. Petersburg, Russia	Total
<i>Sample size</i>	360	381	741
<i>Gender</i>			
Male	173	158	331
Female	175	223	398
<i>Age</i>			
18–28	66	180	246
29–39	96	142	238
40–50	90	39	129
51–61	64	18	82
62–72	43	1	44
73+	0	1	1
Non-response	1	0	1
<i>Education</i>			
Elementary	1	4	5
Middle school	22	24	46
High school	68	52	120
Some college	33	83	116
College degree	66	122	188
Some grad study	80	81	161
Graduate degree	89	15	104

### Results of Data Analysis

The dependent variable – service recovery success – is measured based upon the two sub-constructs of post-recovery customer satisfaction and customer loyalty. Subjects responded to two questions regarding their level of satisfaction with the service operation, and two questions regarding their level of loyalty to the service provider.

The four responses were combined in one scale to measure service recovery success as the combination of satisfaction and loyalty. The reliability of this scale, Cronbach's  $\alpha = 0.9269$ , indicates a likelihood that these are measures of the same construct. Due to the strong correlations among all four of the variables, the dependent variable – service recovery success – was measured as the additive function of the four responses to questions regarding customer post-recovery satisfaction and loyalty.

TABLE 4 Analysis of variance results

(1)	(2)	(3)	(4)	(5)	(6)
Corrected Model	8513.427	15	567.562	55.201	0.0000
Intercept	45306.435	1	45306.435	4406.485	0.0000
Treatment (T)	7625.427	3	2541.809	247.215	0.0000
Criticality (C)	12.665	1	12.665	1.232	0.2680
Nationality (N)	103.205	1	103.205	10.038	0.0020
C*T	95.489	3	31.830	3.096	0.0270
N*T	211.008	3	70.336	6.841	0.0000
N*C	345.029	1	345.029	33.557	0.0000
N*C*T	120.918	3	40.306	3.920	0.0090
Error	4976.373	484	10.282		
Total	59378.000	500			
Corrected Total	13489.800	499			

NOTES  $\alpha = 0.05$ . Column headings are as follows: (1) source, (2) type III sum of squares, (3) *df*, (4) mean square, (5) *F*, (6) *p*-value.

Since each question was based upon a five-point scale with responses from 1 to 5, the combined scale had possible response ranges of 4 (minimum) to 20 (maximum).

#### EVALUATION OF THE RESEARCH PROPOSITIONS

The research propositions suggest the need to examine differences among groups based upon three variables: service recovery system design (treatments), criticality, and nationality. Thus, a three-way factorial Analysis of Variance (ANOVA) was used to examine these differences. Over 40 respondents from each nation were assigned to each cell. The ANOVA results are presented in table 4.

ANOVA results were interpreted at a significance level of  $\alpha = 0.05$ . Significant differences in service recovery success were discovered for two of the three main effects, providing support for two of the first three research propositions. Proposition 1 was supported, as significant differences were found among the treatments that represent the various levels of service recovery design ( $p < 0.001$ ). As service recovery design (treatments) included more recovery efforts, recovery success scores increased. Differences were not found in service recovery success based upon criticality alone ( $p < 0.2680$ ); thus, Research Proposition 2 was not supported. Significant differences in service recovery success were identi-

TABLE 5 Descriptive statistics

(1)	(2)	(3)	(4)	(5)	(6)
Russia	Low	1	5.9687	3.2872	32
		2	5.0323	2.4561	31
		3	11.1333	3.3086	30
		4	11.5000	5.3702	32
		Total	8.3920	4.7517	125
	High	1	4.7879	1.4088	33
		2	6.4375	3.0047	32
		3	12.8438	3.9604	32
		4	14.9474	3.6977	38
		Total	9.9481	5.3439	135
Total	1	5.3692	2.5652	65	
	2	5.7460	2.8168	63	
	3	12.0161	3.7307	62	
	4	13.3714	4.8250	70	
	Total	9.2000	5.1178	260	

*Continued on the next page*

fied between the two nationality groups of Russia and China ( $p < 0.001$ ), with recovery success scores higher for Chinese respondents than for Russian respondents. This result was found across all treatments and both criticality levels, providing support for Proposition 3.

Analysis of the interaction effects of the ANOVA was required to evaluate Research Propositions four through six. Each of these results was also examined at the significance level of  $\alpha = 0.05$ . All three interaction effects were found to be significant. Descriptive statistics for each of the factorial cells were calculated to allow for further evaluation of the interaction effects. Table 5 contains these descriptive statistics.

Figures that present the graphical plot of the descriptive statistics presented in table 5 have been prepared to illustrate these interactions. The  $y$ -axis of the graphs in figures 2 and 3 represents the service recovery success measurement. The service recovery design treatment is represented on the  $x$ -axis, with the intervening variable of interest plotted against those axes. Figure 4, which illustrates the interaction between Nationality and Criticality, contains Nationality plotted against the  $x$ -axis of Criticality and the  $y$ -axis of service recovery success.

TABLE 5 *Continued*

(1)	(2)	(3)	(4)	(5)	(6)
China	Low	1	6.6333	3.0567	30
		2	7.1333	3.0596	30
		3	13.2667	4.3226	30
		4	16.9000	2.5100	30
		Total	10.9833	5.4124	120
	High	1	5.4333	1.9061	30
		2	4.8667	1.1958	30
		3	10.0333	2.6325	30
		4	15.6667	3.2092	30
		Total	9.0000	4.9417	120
	Total	1	6.0333	2.5970	60
		2	6.0000	2.5710	60
		3	11.6500	3.9049	60
		4	16.2833	2.9233	60
Total		9.9917	5.2661	240	

NOTES Column headings are as follows: (1) nationality, (2) criticality, (3) treatment, (4) mean, (5) std. deviation, (6) *N*.

Research Proposition 4 suggests that the level of service criticality influences the effectiveness of service recovery design. The interaction effect of Criticality and Treatment was significant ( $p < 0.05$ ), providing support for this proposition. This interaction is demonstrated in figure 2. A significant difference ( $p < 0.01$ ) in service recovery success between low and high criticality services was found at service recovery design treatment level 1.

The nationality of research subjects has also been found to influence the effectiveness of service recovery system design. Research Proposition 5 was supported by the significance of the interaction effect of Nationality and Treatment ( $p < 0.001$ ). Figure 3 illustrates this interaction effect. The divergence in service recovery success occurs at the highest level of service recovery system design treatment with respondents from China exhibiting significantly ( $p < 0.001$ ) higher levels of recovery success.

Analysis of the differences between nationalities showed significant differences ( $p < 0.001$ ) at the low level of criticality, but not at the high level. Of particular note are the differences in the direction of change

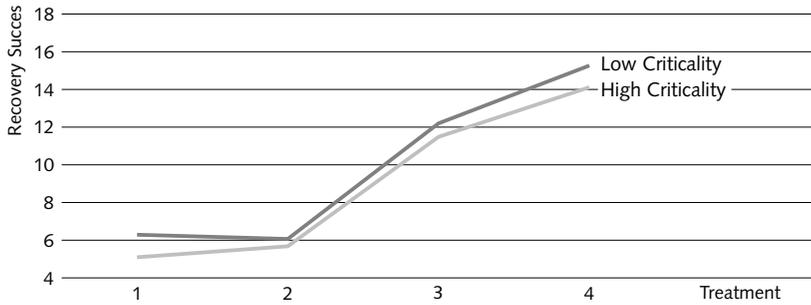


FIGURE 2 Interaction of Treatment and Criticality

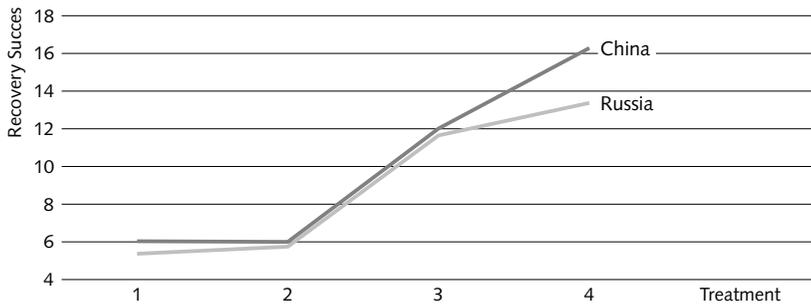


FIGURE 3 Interaction of Treatment and Nationality

in recovery success for the two countries. Service recovery success increased for Russian subjects as criticality increased, while Chinese respondents reported decreases in service recovery success scores as criticality strengthened. This difference in direction likely contributes to the lack of significant differences on the main effect of criticality.

Although the direction of change in the recovery success mean score varied by nationality, both groups produced significant differences in criticality. The Russian group showed significant differences ( $p < 0.05$ ) in recovery success between low and high criticality. Significant differences between criticality levels ( $p < 0.01$ ) were also found in the group of Chinese respondents. The interaction between Nationality and Criticality is demonstrated in figure 4.

### Discussion

In this study researchers investigated the role of service recovery in two major economies that are currently in transition from a planned to a market economy. Four recovery systems (treatments) were examined

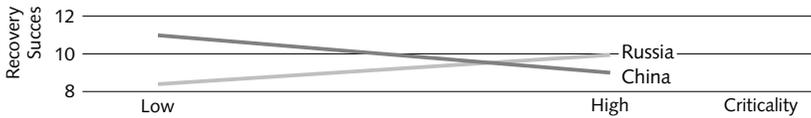


FIGURE 4 Interaction of Criticality and Nationality

within the context of two levels of service criticality (table 1 and table 2). A controlled quasi-experimental research design was used to eliminate alternative explanations for research results that can emerge from studies that lack control and random assignment of subjects to treatments.

Our first finding is that service recovery system design matters in customer satisfaction and loyalty in Russia and China. As service recovery design (treatments) included more recovery effort, recovery success improved. While this result is certainly expected, it was important to initially establish that results in transition economies correspond to research findings in Western studies.

Another research result of interest to service researchers is the finding that service recovery success differed across the two sampled nationalities. When all service recovery treatments and service failure criticality levels were considered concurrently, Chinese respondents in this study reported higher levels of satisfaction and loyalty overall than did Russian respondents. The common experience of transition from planned to market economy did not produce the same service recovery success.

One finding that helps explain this country difference is produced by the analysis of an interaction effect. The difference in service recovery success identified between the two studied countries may not be as discrete as would appear in the results of the main effect only. Figure 3, illustrating the interaction between treatment (recovery design) and nationality, shows that patterns of recovery success are related. Both countries exhibit increasing recovery success as the service recovery effort improves. There is no significant difference in recovery success between Russian and Chinese respondents at Treatment levels one through three. The difference is shown only at the highest level of recovery (Treatment 4) where the recovery effort that included value-added atonement produced higher satisfaction and loyalty in Chinese respondents than in Russian respondents.

This raises an important question: why did Chinese consumers respond more positively to value-added atonement than their Russian counterparts? This query indicates a need for further research.

Surprisingly, variations in criticality of service failure, when examined across service recovery design treatments and nationalities, did not produce different levels of service recovery success. Respondents that vicariously (through written scenario) experienced a service failure of higher criticality did not report differences in their post-recovery satisfaction and loyalty from the respondents that experienced the failure of a less critical service. An equally unexpected result is the limited interaction between treatment and criticality. While differences in recovery success based upon criticality were reported for Treatment 1, no differences were reported at any of the other treatment levels.

These unexpected results are likely explained by the final finding: the interaction of nationality and criticality. When looking at each nationality group separately, both groups reported different levels of recovery success depending upon the criticality of the service failure. However, the two groups reported changes in the opposite direction. As criticality moved from low to high, the service recovery success for Chinese respondents decreased, as expected. Under the same circumstances the Russian subjects experienced an increase in service recovery success, contrary to expectation. This interaction confounded the expected result of overall differences in recovery success depending on criticality.

#### IMPLICATIONS FOR RESEARCH

In countries in transition to a market economy, understanding appropriate service delivery systems is a relatively new field of inquiry. This study builds upon a growing stream of research examining service recovery and the design of the service recovery system in Western contexts. This research has provided empirical evidence supporting some previously suggested relationships in service recovery success. The body of knowledge has been extended in the realm of economies in transition. Yet this theoretical contribution represents the tip of the iceberg of needed study in the field. The opportunity and need for further exploratory and confirmatory research in the field is extensive.

This research provides empirical evidence supporting conclusions that the type of service recovery system design impacts resulting customer satisfaction and loyalty. However, the findings of Webster and Sundaram (1998), who found that service criticality impacts both customer satisfaction and loyalty, were not upheld. This failure to find significant differences based on service criticality is likely a result of the interaction between nationality and criticality, which confounds the general finding.

Criticality was found to be important, but in differing manners across the two countries.

These unexpected results suggest an important avenue for future inquiry. Researchers and practitioners in the field need to better understand how criticality of the failed service influences the success of service recovery efforts in different populations. What differing aspects of the transition process influence consumer perceptions of service criticality? Are there other environmental elements that need to be considered? How does the criticality of a service influence service recovery success? Since there is no current explanation for these results, further research is indicated.

Another obvious question that arises from this research is the need to understand the reason why recovery success with value-added atonement was higher among Chinese consumers than Russian consumers. Why did Chinese consumers respond to value-added atonement recovery efforts more than Russian consumers? The answer to this question may be important to other economies in transition from planned to market economic systems.

While Russia and China are two of the largest countries undergoing transition of economic systems, there are numerous other economies currently experiencing such a transition. There are also several economies that may potentially transition at a future time. Thus, an important extension of this research would be replication of this study in other transition economies, primarily Central and Eastern Europe. As noted above, regional differences were found in service recovery success in the matters of criticality and the impact of value-added atonement. Additional data points from other transition economies will strengthen understanding of these, and other, service recovery issues while enlarging our ability to generalize findings to other economies in transition from planned to market economy.

#### IMPLICATIONS FOR PRACTICE

This study establishes some important considerations for service providers and service recovery system designers in two major countries with economies in transition. The primary consideration is that service recovery matters in countries in transition to market economies. As customer expectations increase, service providers can increase customer satisfaction and loyalty by making efforts to compensate for service failures. Managers in service firms operating in economies in transition need to

give additional attention to recovering customers that experience service failures.

Service recovery system design is complex. While the level of recovery effort makes a difference in a service provider's ability to succeed in recovering failed customers, there are numerous variables that can influence – or even alter – the outcomes. In this study we identified two such variables that are associated with varying levels of service recovery success: response to value-added atonement efforts and recovery success in conjunction with criticality of the failed service.

When a service failure occurs, service recovery success is expected to increase when the service provider compensates for customer psychological costs, such as inconvenience and additional time investment to receive the anticipated quality of service. Yet, these value-added atonement efforts are often costly. This research found that value-added atonement efforts produced different levels of recovery success in the two countries studied. The resulting recommendation from this finding is the need for managers in transition economies to understand the role that value-added atonement plays in encouraging recovery success in their environment. Service providers need to cost-effectively recover the satisfaction and loyalty of customers without incurring unnecessary expenses that do not contribute to recovery success.

Differences in consumer response to varying levels of service criticality also resulted in dissimilar recovery success outcomes. The responses of consumers in China were the opposite of responses in Russia. Thus, service providers in transition economies need to understand consumer perceptions regarding service criticality in the environment in which they operate.

Findings in this study should encourage service operations managers in transition economies to evaluate the environments in which their service recovery systems are put into practice. This is also important for multinational firms that are expanding service operations across national borders. The service recovery system that is effective in one environment may need adaptation to achieve appropriate levels of success when exported.

#### LIMITATIONS OF THE STUDY

While this research has established some important theoretical relationships in the design of service recovery systems, it would not be appropriate to generalize these findings across environments, products, or even

recovery system designs. Specific implementation recommendations are beyond the scope of this study.

It is not possible to generalize the results of this study across countries, or even to the entire populations of each of the nations studied. The populations studied were consumers residing in one city in each of the two countries. These samples were examined to provide a context within transition economies rather than to provide results typical of the entire nations from which the samples were drawn. Likewise the products selected to represent retail service failure were selected to represent variation in levels of service criticality rather than product-specific marketing research. Conclusions drawn concerning each of these products would not be supported by this study.

In this study the researchers have examined various levels of service recovery system design. However, they did not exhaust all design possibilities nor identify optimal combinations of service recovery elements in the system. As scholars identify new elements of service recovery system design, and test combinations of these elements within realistic environments, the body of knowledge in the field will continue to expand. Unlike critical incident technique, written scenarios do not allow respondents to describe personal recovery failures and their service provider's recovery efforts (Goldstein et al. 2002). However, the controlled, quasi-experimental research design of this study encourages reliable establishment of theory rather than results that can be generalized beyond the studied populations and questions. Further research is needed to build upon the findings of this study in exploring the salient issues and principal relationships in service recovery efforts.

#### CONCLUSION

Growing customer expectations are an important hallmark of progress in transition to a market economy. This expansion of customer desires, enhanced by greater quantity and improved quality of consumer goods and services, increases the consequences resulting from service failure – the failure of a service provider to meet the expectations of one or more customers. The competition fostered by a market system amplifies the need for service providers to find a way to recover these customers that have been failed.

This research highlights the effectiveness of well-designed service recovery systems in retaining customer satisfaction and loyalty in two economies in transition to a market economy. While recovery success

was not identical in the two countries studied – Russia and China – recovery efforts were found to assist in customer retention. It is not surprising that research outcomes in these marketizing economies closely reflected results of studies conducted in established market economies. Thus, service providers in transition economies must include recovery in their service system design in order to regain the satisfaction and loyalty of customers that have experienced service failure.

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## Appendix: Survey Instrument

### FAILURE SCENARIO AND RECOVERY PROCESS TREATMENT SCENARIOS: LOW CRITICALITY

#### *Failure Scenario*

You hear that a store close to your home is having a sale on pants. You think you could use another pair of pants, so you take a few minutes to go to the store and buy them. When you return home, you notice that the zipper does not work.

#### *Recovery System Design Treatment Scenarios*

1. You return to the store that sold you the pants and tell the owner about your problem. The owner says that the problem is the manufacturer's fault and the store cannot do anything about it. He acts angry with you for approaching him.
2. You return to the store that sold you the pants and tell the owner about your problem. The owner says that the problem is the manufacturer's fault and the store cannot do anything about it.

3. You return to the store that sold you the pants and tell the owner about your problem. The owner replaces your defective pants with a new pair.
4. You return to the store that sold you the pants and tell the owner about your problem. The owner replaces your defective pants with a new pair and returns 15% of your money to repay you for the inconvenience.

FAILURE SCENARIO AND RECOVERY PROCESS TREATMENT  
SCENARIOS: HIGH CRITICALITY

*Failure Scenario*

Your old television has broken and you want to buy a new one. You spend an entire week shopping in many different stores looking for a television. Finally, in a store far from your home, you find a very expensive television. You purchase it after the proprietor demonstrates that it works. The television does not have a warranty but the owner assures you that it is in very good condition. You take it home and discover that it doesn't work.

*Recovery System Design Treatment Scenarios*

1. You call the store that sold you the television and tell the owner about your problem. The owner says that the problem is the manufacturer's fault and the store cannot do anything about it. He acts angry with you for approaching him.
2. You call the store that sold you the television and tell the owner about your problem. The owner says that the problem is the manufacturer's fault and the store cannot do anything about it.
3. You call the store that sold you the television and tell the owner about your problem. The owner offers to replace your defective television with a new one.
4. You call the store that sold you the television and tell the owner about your problem. The owner offers to replace your defective television with a new one and return 15% of your money to repay you for the inconvenience.

SURVEY QUESTIONS

Please answer the following questions about this service:

1. How was the performance of this service, with regard to your expectations?
  - a) Greatly exceeded your expectations.
  - b) Somewhat exceeded your expectations.
  - c) Met your expectations.
  - d) Somewhat short of your expectations.
  - e) Far short of your expectations.

2. What is the likelihood that you will again patronize this service provider?
  - a) No chance.
  - b) About a 25% chance.
  - c) About a 50% chance.
  - d) About a 75% chance.
  - e) Will definitely patronize this business again.
3. How do you rate the quality of this service?
  - a) Extremely high.
  - b) Somewhat high.
  - c) Average.
  - d) Somewhat low.
  - e) Extremely low.
4. Would you recommend this business to your friends or associates?
  - a) No chance.
  - b) About a 25% chance.
  - c) About a 50% chance.
  - d) About a 75% chance.
  - e) Will definitely recommend this business to others.



# *The Modified Diagonalization Method for Analysing Clusters within Economies*

Henryk Gurgul  
Paweł Majdosz

In this paper a modification of the diagonalization method, originally put forward by Hoen (2002), is suggested which is aimed at uncovering clusters of sectors within an input-output framework. Our interest in this subject was largely motivated by the fact that the preceding method appears to be incapable of providing us with an accurate representation of the real cluster structure that exists in an economy, as a consequence of missing the position at which a given inter-sectoral flow stands in the hierarchy of the purchasing industry and the supplying industry. By making a distinction between an internal and external relationship, when it comes up at the moment of deciding whether each pair of industries is categorized as belonging to the same or different clusters, the proposed alternative, which will be referred to as the modified diagonalization method, seems to be superior to its predecessor. Such a conclusion is supported by the results of comparison of the relative performance of the rival methods (i. e. the original and modified diagonalization method) which show, among other things, that the average value of flows between industries grouped into clusters is higher in the case of the proposed method.

*Key Words:* internal and external interindustrial relationships,  
diagonalization method, clusters

*JEL Classification:* B41

## **Introduction**

Industry clusters are nowadays an intrinsic element of the economic landscape of almost every country all over the world. Cluster-related problems have been viewed from various perspectives (spatially, inter-industrially and intra-industrially) and in varying contexts (see e.g.

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Munroe and Hewings 2000). Theoretical interest in the concept of clustering is first and foremost associated with classical work on agglomeration in which the process of clustering is typically explained by the presence of externalities such as economies of scale and scope, which give economic advantages to firms agglomerating in a certain locality (see e. g. Hoover 1937; 1948; Marshall 1890; Ohlin 1933). Over the course of decades, there has been a tremendous development in the literature concerning this subject, and a comprehensive review of it is provided by Bekele and Jackson (2006). In the work of the mentioned authors the interested reader can find more details.

These theoretical approaches have been accompanied by empirical investigations of the clustering phenomenon which have found evidence supporting the presumption that an industry cluster allows enterprises to reduce costs, uncertainties and risks (see e. g. Antonelli 1999; Krugman 1991; Krugman and Venables 1996; Porter, 1998). Re-orienting economies towards a knowledge-based model has entailed a growing awareness that competitive success increasingly involves innovations and continuous quality improvements. The role of industry clusters has again appeared to be of crucial importance, this time, as a mechanism that enables innovations to spread throughout the economy (see e. g. Hauknes 1998; Martin and Sunley 2003).

Despite the importance of cluster analysis in explaining and exploring real economic structure, the effort which has been undertaken to improve the methods of cluster identification hardly gives an answer to the most urgent questions and there are still many problems unsolved in the face of which researchers may rely only on their own intuition. Overall, the practical application of cluster analysis poses many difficulties, especially since there is no uniform definition of what we should consider as a cluster. Definitions used in practice frequently depend on the particular ends to which a given study is subordinated. On the basis of the applied definition of cluster, one then decides which of the alternative methods of grouping sectors into clusters is employed. Confining our primary interest to the input-output context exclusively, it might be noticed that if great emphasis is placed in the definition upon intermediate deliveries between sectors within the economy, it is likely that the cluster identification method will be based on the matrix of intermediate deliveries. If attention is focused on the inputs of the  $i$ th product which are required for a one-unit increase in the production of the  $j$ th sector, the matrix of input coefficients may be selected as a base. If what is more important

are inputs of the  $i$ th product required to meet the demand of (all) other sectors associated with a one-unit increase in the final demand of the  $j$ th sector, rather than those necessary for such an increase in the production of the  $j$ th sector, the inverse Leontief matrix will be probably used in place of the matrix of input coefficients. And finally, if the cluster definition stresses the extent to which the production of the  $i$ th sector is used by the  $j$ th sector in order to contribute to further production, the matrix of output coefficients may appear to the researcher to be particularly useful for dealing with the cluster identification problem.

The existence of many methods that can be used in practice for identifying inter-industrial relationships composing clusters contributes to the emergence serious difficulties with result comparability and could lead to a misinterpretation of the obtained evidence. It seems to be particularly controversy-prone when one of the rules underlying a technique employed is an economic meaning of the resulting clusters. By allowing this principle, any potential cluster that is an outcome of the formal procedure used in a first stage can then be cast away by the researcher as being deprived of precise economic meaning. The most important question that must be answered in all those cases where an economic meaning is a valid rule of the overall cluster identification procedure is to which extent the obtained results describe the actual cluster structure within the economy or, speaking more clearly, whether an exclusive goal of it is not, in fact, to support the presupposed statements and beliefs of the researcher. As long as different researchers will be tempted to base their work on the questionable principle of the economic meaning of identified clusters, any effort to improve and develop the rigorous methods for uncovering cluster structure, which could restrict the scope of arbitrariness related to the empirical studies that are undertaken in this momentous field, should be welcome.

In this paper a method designed to identify industry clusters within the economy is suggested. The main advantage of the method stems from the fact that it relies on a three-level classification of interindustrial linkages, thereby making it possible to discern between internal (or intra-cluster) relationships and external ones which connect industries belonging to different clusters, or industries within clusters with those outside. The suggested method is presented in the context of its predecessors, such as the diagonalization method (DM) proposed by Hoen (2002), and an extensive comparison using data from different countries and dates is carried out to enable the relative performances of these meth-

ods to be ascertained. The major conclusion that can be drawn from the results is that the proposed method tends to produce structures of industry clusters which seem to be more plausible and, at the same time, the level of internal relationships measured by the average value of flows among industries grouped into clusters is even higher than that of those obtained by means of the DM.

The remainder of the paper is organized as follows. In the next section several customarily used methods of identifying industry clusters are outlined and the alternative, i. e. the modified diagonalization method (MDM) is suggested. The third section contains a brief description of the data used in comparing the relative performances of the alternative methods. The empirical results are reported in the fourth section, while the fifth section concludes the paper.

### Cluster Identification Methods

To facilitate a comparison of the proposed method with those hitherto-existing, we start with an outline of the latter, thereby giving a background against which the method suggested in this paper is formed as a remedy for some of their shortcomings. As was mentioned in the previous section, one characteristic that may make one method for identifying clusters different from another is that it may use the input-output matrix of a different sort as the base for computation. Let  $\hat{x}$  denote the vector of gross output and  $Z$  be the matrix of intermediate deliveries whose elements show the amounts of output of the  $i$ th sector that are sold to the  $j$ th industry to maintain its own production. Then, the related matrices, i. e. the matrix of input coefficients ( $A$ ), the Leontief inverse ( $D$ ), and the matrix of output coefficients ( $B$ ), can be derived, in turn, as follows:

$$A = Z\hat{x}^{-1} \quad (1)$$

$$D = (I - A)^{-1} = L^{-1} \quad (2)$$

$$B = \hat{x}^{-1}Z \quad (3)$$

where a hat is used to denote the diagonal matrix with elements of the vector on its main diagonal and all other entries equal to zero.

The simplest algorithm of grouping sectors into clusters, and the most frequently used in practice, the so-called method of maximization (MM), involves finding the largest off-diagonal element of a selected matrix (suppose that this matrix is  $A$ ) and joining the sectors with the largest amount of intermediate deliveries until the number of clusters identified

in such a way reaches a previously fixed threshold. The only advantage of this algorithm arises from its simplicity. However, it suffers from the so-called mega cluster problem and the fact that the obtained solution is sensitive to the matrix chosen as a basis of computation. In other words, although there are relationships among the matrices (as expressed by (1)–(3)), each of them embodies different information, and it may happen that the clusters yielded by this algorithm will be completely different when we use, for example, the  $Z$  in place of  $A$  or  $D$  instead of the  $B$  matrix.

Similar to the above-described method of uncovering clusters within the economy is the method of restricted maximization (RM). Roughly speaking, whilst the former takes into account all off-diagonal elements of the respective matrix to form the clusters, the latter focuses only on those which are large enough to satisfy the imposed restrictions. Such restrictions may be expressed in different ways, but without knowledge of the distribution of the matrix elements, it is usually formulated as a multiplication factor of the matrix average. This approach appears to be more flexible for several reasons. It allows the involvement of two or even all the matrices under consideration simultaneously, by imposing a conjunction of the respective restrictions for the single matrix. The method does not require the number of clusters to be determinate at the beginning of the investigation; instead one can adjust the value of the multiplication factor to obtain the same effect. Conversely, it does not deal with the possibility of varying clusters when different matrices are used as the basis for calculation.

Hoен (2002) put forward the DM which appears to be superior to the above-described ones. The first stage of this approach involves formulating a binary matrix ( $R$ ), holding ones and zeros, which is given as:

$$r_{ij} = \begin{cases} 1 & \text{if } a_{ij} > q(A, 1 - \alpha) \wedge b_{ij} > q(B, 1 - \alpha) \\ 0 & \text{otherwise} \end{cases}, \quad (4)$$

where  $q(X, p)$  stands for quantile of the elements of  $X$  at the order  $p$ .

Then, by permuting its rows and columns, these are an attempt to transform matrix  $R$  into a block-diagonal matrix so that each of its blocks represents one cluster. The reasoning underlying this method is that the cluster should encompass all sectors which are connected to each other and, at the same time, unattached from the rest of the economy. Changing the level of significance  $\alpha$ , we decide which intermediate deliveries,

input coefficients and output coefficients are regarded as significant and which are insignificant and to be fixed at zero. The higher the level of  $\alpha$ , the more linkages there are among the sectors within the economy, but not always more clusters are identified as Hoen himself would wish. This issue will be given more attention later on.

As Hoen (2002) documented, the DM solves the problem of changes in the composition of clusters with respect to the matrix used as a basis, and facilitates a better insight into the structure of an economy by not requiring the number of existing clusters to be specified at the beginning of the investigation. However, this approach also has several drawbacks. One is that the respective quantiles are obtained on the basis of all matrix elements, including those located on the principal diagonal. When this method is used for comparative purposes, i. e. to examine how far the composition of clusters is unchangeable over time, it seems to be reasonable to fix parameter  $\alpha$  at the same level during the whole analysed period. But the two sets of results obtained by this means from different points are comparable only if there is no change in the proportion of elements placed on the principal diagonal to the off-diagonal elements. This is probably not a problem in the case of developed countries where the off-diagonal elements of the respective matrices dominate those located on the principal diagonal, indicating that each sector assigns only a small portion of its own current outputs in order to contribute to further production, but for transitional countries this ratio is reversed (see e. g. Ćmiel and Gurgul 2002; Gurgul and Majdosz 2005). Within a few years of market-oriented reforms the share of off-diagonal flows within the economies of the countries in transition is expected to increase and the problem will vanish when it reaches a level which is typical of developed countries all over the world. Until then however, it is recommended that all elements on the diagonal be set at zero before calculating the respective quantiles.

As mentioned above, using the DM does not require the number of clusters to be determined by the researcher. Instead, the level of significance  $\alpha$  can be adjusted for the same result, i. e. to obtain the pre-determined number of clusters identified within the economy. However, there is no unambiguous relationship between the level of significance  $\alpha$  and the number of uncovered clusters. With a higher value of parameter  $\alpha$ , more entries in the matrix of interest emerge as important linkages and nothing further. Under some particular circumstances, this may lead to the inclusion within clusters of sectors previously excluded

at the lower level of significance  $\alpha$ , or even to identifying new clusters. Nonetheless, it should be stressed that the relationship: the higher parameter  $\alpha$ , the more clusters uncovered is not automatically true. More strictly speaking, for some range of values of parameter  $\alpha$  such a relationship holds true, but for another it does not. To realise this, suppose that parameter  $\alpha$  is equal to zero, implying that matrix  $R$  consists of zeros, exclusively. Without significant entries in the respective matrix, no cluster will be identified. In contrast, when parameter  $\alpha$  equals 100%, matrix  $R$  is formed with ones. Having only sectors with significant linkages with each other, all the sectors are now included within the same identified single cluster. It becomes immediately obvious that for  $\alpha$  to belong to the range from 0 to  $k$  the number of identified clusters is a non-decreasing function of  $\alpha$ , but if  $\alpha$  belongs to the range from  $k$  to 1, the number of identified clusters is a non-increasing function of  $\alpha$ . For the sake of simplicity, we abstract from a situation where the number of clusters is serially a non-decreasing and non-increasing function of  $\alpha$  for  $\alpha \in \langle 0, k_1 \rangle \cup \langle k_1, k_2 \rangle \cup \dots \cup \langle k_n, 1 \rangle$ .

Therefore,  $k$  is a threshold, in excess of which the number of uncovered clusters within the economy can only diminish. This is accompanied by a trend towards the joining of clusters, thus obscuring the real cluster structure we want to explain and explore. Theoretically, with a simplified example like this, it is possible to determine a threshold  $k$ , not analytically of course but only practically by trial-and-error, and by selecting a level of significance  $\alpha$  which is below or even equal to this threshold to avoid blurring the economy's structure. In practice, however, when it is likely that the number of clusters is serially a non-decreasing and non-increasing function of  $\alpha$ , we would have to estimate the  $n$  threshold of  $k_i$  (where  $n$  is the number of changes in direction). Even if the values of the threshold for any  $i$  are known, a still unanswered question is which value out of the  $n$  thresholds should be used to maximize the transparency of the identified relationships among the sectors operating within the real-world economy. In the light of the above-mentioned difficulties, it is obvious that an effort should be undertaken to develop another approach which, being aimed at identifying clusters of sectors within the economy, distinguishes between linkages of sectors belonging to the same cluster, relationships between two sectors arising from different clusters, and the linkages of sectors within clusters with the rest of the sectors classified as outside the clusters.

Defining the problem, it should be stated that the main shortcoming

of the  $\text{DM}$  stems from its inability to classify sectors which may potentially be assigned to more than one cluster. Without a rule for grading linkage strength, in the case when a given sector has relationships with two different clusters, the  $\text{DM}$  blurs the economy's structure by joining these clusters into one. Hence, the method proposed by us, the  $\text{MDM}$ , should be first and foremost provided with an operational principle which enables the alternative allocations of a given sector to be ranked in respect to the strength of inter-industry linkages associated with each of them.

Seeking a solution to this problem, it becomes apparent immediately that the application by the  $\text{DM}$  simple categorization of inter-industrial relationships, according to their magnitudes, as significant or not is no longer valid, and that the significant relations among industries have to be further broken down if the proposed method is to give any advantages to the researcher who is irritated by the necessity to choose the threshold  $k$  in such a way so as to maximize the number of clusters uncovered without any, even the slightest, guide as to how it should be reached in practice. We would gain little, if anything, by setting leaning a division of the significant – in terms of magnitude – inter-industrial relationships on the absolute value principle since this amounts to introducing two unattached thresholds, instead of the one acting under the original diagonalization method, which would be hardly able to avoid the tendency to amalgamate different clusters into one with  $\alpha$  increasing. What we propose in this paper is to look at a given connection from the perspective of co-relative industries. Each inter-sectoral relationship expressing the actual flow of goods and services which takes place between two involved industries can be considered, at least, from two different viewpoints, namely, the side of industry that sells its output and the side of industry that purchases it. Whereas in the case of the former, a question we have to answer concerns an issue as to what is the position of the flows in the hierarchy of the selling industry. In the case of the latter, we will be rather concerned with the degree to which that same flow is crucial for the purchasing industry.

Suppose that the element located in the  $i$ th row and the  $j$ th column of the matrix  $Z$ , i. e.  $z_{ij}$ , is deemed as significant, no matter what the term 'significant' exactly means here. Then the  $i$ th sector is a supplier (seller) whilst the  $j$ th sector represents the demand side (buyer). Note that under the  $\text{DM}$ , such sectors connected by the element  $z_{ij}$  would be automatically considered as composing the same cluster. But now, such a conclu-

sion will be valid if, and only if, in the  $i$ th row there is no element that would be greater than the element placed on the  $j$ th column and, at the same time, in the  $j$ th column there is no element exceeding those located in the  $i$ th row. This means that here we focus our attention on the relative position of the flow at hand, on the list of deliveries of the selling industry as well as on the list of purchases of the buying industry. Only if the considered flow is ranked first in terms of both the lists, will the situation be equivalent to those presupposed by the DM, and the corresponding relationship will be referred to as internal or primary (from a given cluster's point of view). On the other hand, if at least one requisite mentioned above is violated, i. e. if there is a larger flow in the  $i$ th row or in the  $j$ th column than the element  $z_{ij}$ , then such a relationship, its significance remaining, will be termed as external or secondary.

Before going on to outline the procedure of the suggested approach, which is based on a distinction made between internal and external (or primary and secondary) inter-industrial relationships, it is necessary to point out one, rather practical, issue. Consider a situation in which  $z_{ij}$  and  $z_{ji}$  are both significant and  $z_{ij}$  is larger than  $z_{ji}$ . It might well happen that  $z_{ij}$  would be categorized as a secondary relation and  $z_{ji}$  as a primary one since there is nothing that would guarantee that both the relationships will be simultaneously considered as internal or external and this may occur only by chance. In order to prevent such an ambiguous finding, it is necessary to introduce the additional conventional principle that with  $z_{ij}$  and  $z_{ji}$  being significant, only that relationship is subject to further consideration which is larger, i. e.  $z_{ij}$  in our simple example.

The proposed approach draws upon several elements that have been utilized under the original diagonalization method. The first step consists of creating the restriction matrix ( $Q$ ), but unlike its predecessor which yields a binary matrix, a three-value-coding is used here to allow for discerning between external and internal linkages. Assuming the matrix of deliveries ( $Z$ ) is to be chosen as a basis for calculation, which however does not impair its generality, we can express the restriction matrix as:

$$q_{kl} = \begin{cases} 2 \text{ if } a_{kl} > q(A, 1 - \alpha) \wedge b_{kl} > q(B, 1 - \alpha) \\ \quad \wedge z_{kl} > z_{kj} > \wedge z_{kl} > z_{il}, \forall i \neq k, j \neq l \\ 1 \text{ if } a_{kl} > q(A, 1 - \alpha) \wedge b_{kl} > q(B, 1 - \alpha) \\ 0 \text{ otherwise} \end{cases} \quad (5)$$

Note that all the input-output matrices involved in (5), i. e.  $A$ ,  $B$ , and also  $Z$  in our example, should be at first prepared in such a way that the elements located on their main diagonal are all set to zero. This is a prerequisite for any further calculation, because without neutralizing the effect of the main-diagonal elements of the respective matrices, the method might produce erroneous results. A reason for this stems not only from the fact that an inclusion of the main-diagonal elements in the calculation of the quantiles in (5) may lead to overestimation of their values, but large entries placed on the main diagonal of the matrix used as a base, are able to change what we will regard as an internal relation or external relation.

The second step is almost identical to the corresponding step under the DM with one exception. Starting with the restriction matrix and using Hoen's algorithm (see Hoen 2002) we then try to transform it into a block-diagonal matrix with respect to the internal inter-industrial relationships only (the entries with a '2' digit) and allow the elements representing the external relations (with a '1' digit) to change their positions freely with row-wise and columnwise permutations that are necessary to complete Hoen's algorithm. In other words, while transforming the restriction matrix into a block-diagonal one, we treat all the entries which, according to (5), are equal to one as if they are set to zero, but without losing information concerning their positions once the algorithm is terminated.

The transformed restricted matrix can be interpreted in terms of external and internal relationships as follows. Each block, as discovered by Hoen's algorithm, represents a single cluster of industries among which only internal relationships occur. The elements of the restriction matrix pertaining to external relationships indicate, therefore, either an inter-cluster linkage or connection of a given cluster with the rest of the economy that are composed of the industries not being assigned to any cluster.

What do we gain from using the suggested method? For instance, if a certain sector is significantly connected with two other sectors belonging to different clusters, it will be assigned to the cluster whose linkage is stronger. Information about the existence of a significant, although relatively weaker linkage with the sector belonging to other cluster is not lost, however, because such a linkage is automatically classified as an external one. In this way the proposed method prevents an unreasonable joining of clusters without omitting significant relationships among the clusters

(or between the clusters and the rest of the economy) and, therefore, offers a better insight into the real structure of the economy. These benefits would, however, appear illusory, if the method does worse in terms of other properties such as, for example, its soundness in the selection of a basic matrix for calculation, or the ratio of average flows among the sectors included within clusters to the analogous value for sectors outside the clusters. Therefore, in the following sections we empirically test the properties of the suggested method and compare the obtained results with those produced by its predecessor, i. e. the DM.

### **Data Description**

When illustrating the MDM's capacity for uncovering the cluster structure as compared with that of the DM, a sufficiently high level of disaggregation of the input-output tables used as the basis for computation is of prime importance. Although the initial number of distinct sectors within an economy differs significantly across empirical investigations concerning the problem of identifying clusters of industries, it can be found that such tables almost always distinguish no less than a hundred sectors (see e. g. Hauknes 1998). In order to find out the relative performance of the method discussed above, we therefore used several national input-output tables for different dates which deal with at least one hundred different sectors and which, of course, were available to us. To be more precise, the tables from three countries were engaged in the sample, namely the US tables for various dates, the Danish tables for various dates, and the UK tables for 1995. In order to keep the presentation of results short, and also because the main conclusions about the promising nature of the MDM remain basically the same irrespective of which country and which date are selected, we decided not to present all outcomes but only those being obtained by using the UK input-output tables for 1995. Other results are available from the authors on request.

The above-mentioned tables, derived directly from the National Statistics, are evaluated at current prices from the seller's point of view (basic prices) and are fully consistent with the European System of Accounts 1995 (ESA 95). The original statistics provide coverage of the economy as a whole combined with 138 industries/products using the Standard Industrial Classification 1992 (SIC 92). The last fifteen entries of the respective tables, however, arose from dividing some industries/products associated with Government and non-profit institutions serving households into market and non-market components. Doing so, the tables give

TABLE 1 Industry classification

1	Agriculture	32	Pulp, paper and paperboard
2	Forestry	33	Paper and paperboard products
3	Fishing	34	Printing and publishing
4	Coal extraction	35	Coke ovens, refined petroleum and nuclear fuel
5	Oil and gas extraction	36	Industrial gases and dyes
6	Metal ores extraction	37	Inorganic chemicals
7	Other mining and quarrying	38	Organic chemicals
8	Meat processing	39	Fertilisers
9	Fish and fruit processing	40	Plastics and synthetic resins etc
10	Oils and fats	41	Pesticides
11	Dairy products	42	Paints, varnishes, printing ink etc
12	Grain milling and starch	43	Pharmaceuticals
13	Animal feed	44	Soap and toilet preparations
14	Bread, biscuits, etc	45	Other chemical products
15	Sugar	46	Man-made fibres
16	Confectionery	47	Rubber products
17	Other food products	48	Plastic products
18	Alcoholic beverages	49	Glass and glass products
19	Soft drinks and mineral waters	50	Ceramic goods
20	Tobacco products	51	Structural clay products
21	Textile fibres	52	Cement, lime and plaster
22	Textile weaving	53	Articles of concrete, stone etc
23	Textile finishing	54	Iron and steel
24	Made-up textiles	55	Non-ferrous metals
25	Carpets and rugs	56	Metal castings
26	Other textiles	57	Structural metal products
27	Knitted goods	58	Metal boilers and radiators
28	Wearing apparel and fur products	59	Metal forging, pressing, etc
29	Leather goods	60	Cutlery, tools etc
30	Footwear	61	Other metal products
31	Wood and wood products	62	Mechanical power equipment

*Continued on the next page*

a better insight into the inter-industrial relationships taking account of the differences in proportions of inputs when an industry's products are sold on market principles as opposed to the case where market mechanisms do not apply. Taking into account the purpose of our investigation, however, we decide not to distinguish market and non-market components and to aggregate the tables into 123 industries/products (see table 1 for the list of sectors), avoiding in this way the zero-row or zero-column problems which would have to be corrected if we did not reduce the number of sectors to the above-mentioned 123.

The original statistics enable the analysis to be carried out either on commodity-by-industry or commodity-by-commodity basis. With

TABLE 1 *Continued*

63	General purpose machinery	93	Railway transport
64	Agricultural machinery	94	Other land transport
65	Machine tools	95	Water transport
66	Special purpose machinery	96	Air transport
67	Weapons and ammunition	97	Ancillary transport services
68	Domestic appliances nec	98	Postal and courier services
69	Office machinery and computers	99	Telecommunications
70	Electric motors and generators etc.	100	Banking and finance
71	Insulated wire and cable	101	Insurance and pension funds
72	Electrical equipment nec	102	Auxiliary financial services
73	Electronic components	103	Owning and dealing in real estate
74	Transmitters for tv, radio and phone	104	Letting of dwellings
75	Receivers for tv and radio	105	Estate agent activities
76	Medical and precision instruments	106	Renting of machinery etc
77	Motor vehicles	107	Computer services
78	Shipbuilding and repair	108	Research and development
79	Other transport equipment	109	Legal activities
80	Aircraft and spacecraft	110	Accountancy services
81	Furniture	111	Market research, management consultancy
82	Jewellery and related products	112	Architectural activities and technical consultancy
83	Sports goods and toys	113	Advertising
84	Miscellaneous manufacturing nec and recycling	114	Other business services
85	Electricity production and distribution	115	Public administration and defence
86	Gas distribution	116	Education
87	Water supply	117	Health and veterinary services
88	Construction	118	Social work activities
89	Motor vehicle distribution and repair, automotive fuel retail	119	Sewage and sanitary services
90	Wholesale distribution	120	Membership organisations nec
91	Retail distribution	121	Recreational services
92	Hotels, catering, pubs etc.	122	Other service activities
		123	Private households with employed persons

commodity-specific technologies being a more persuasive assumption in an input-output framework, the latter form of tables are used in the entire study. It should, however, be stressed that the findings do not differ significantly with respect to both techniques of deriving input-output tables in their quadratic form.

### Empirical Results

Neither of the above-outlined methods of identifying clusters necessitates the number of distinct clusters to be specified in advance. Instead, changing the level of significance  $\alpha$  gives the same result, that is, the desired number of identified clusters is achieved. But comparing the relative performances of the methods at a fixed level of significance may be

rather confusing due to the fact that each of these methods is likely to have a different range of  $\alpha$  over which reasonable results are produced. Another, and perhaps more revealing, way of illustrating their implementation is by imposing a fixed number of identified clusters without a concern for the level of significance at which it is achieved in the case of each of the methods. Following the latter, we selected the number of clusters to be identified by means of each of the methods under consideration (16 clusters were chosen), and then the level of significance was adjusted until the specified number of clusters was reached. While the DM gives the desired number of clusters at a level of significance amounting to 0.5%, the corresponding value for the MDM is equal to 1.32%. Perhaps, it should be here remembered that  $\alpha$  (or level of significance at which clusters are evaluated) is simply a single complement of quantile order that is calculated on the basis of the matrix elements (see the equations (4) and (5)). Note also that the input-output matrices involved in computation were first adjusted for main-diagonal element effects by imposing a zero diagonal principle (all the corresponding entries were set to zero), so that what constitutes a basis for calculation of the quantiles are only the off-diagonal elements of the respective matrices.

Figure 1 depicts the cluster structure of the UK economy for 1995 based on the DM. With the help of this it becomes immediately obvious why as many as 16 clusters need to be identified to compare the alternative approaches. Of the 16 uncovered clusters only 7 are composed of three or more industries. Surprisingly, as will be shown later on, the same proportion of so-called mini-clusters, where only one inter-industry relationship constitutes a cluster, applies to the results obtained by means of the MDM. Consideration of such mini-clusters is not of interest from the practitioner's point of view, though they have some informational content. Searching for significant levels at which the problem of mini-clusters does not exist, although theoretically possible, would lead to a worse transparency of results and compromise the overall comparison of alternative methods of identifying clusters, which is the main aim of this study. Preferring to preserve the transparency of our results as far as possible, we decide not to adjust for mini-clusters, but hardly any attention will be given to such clusters due to their minimal economic importance for a practitioner. Despite this, the full results are presented, including mini-clusters, to facilitate for interested readers an insight into the real economic landscape of the economy under study. One important consideration which can be drawn from the relative high ratio of mini- to all

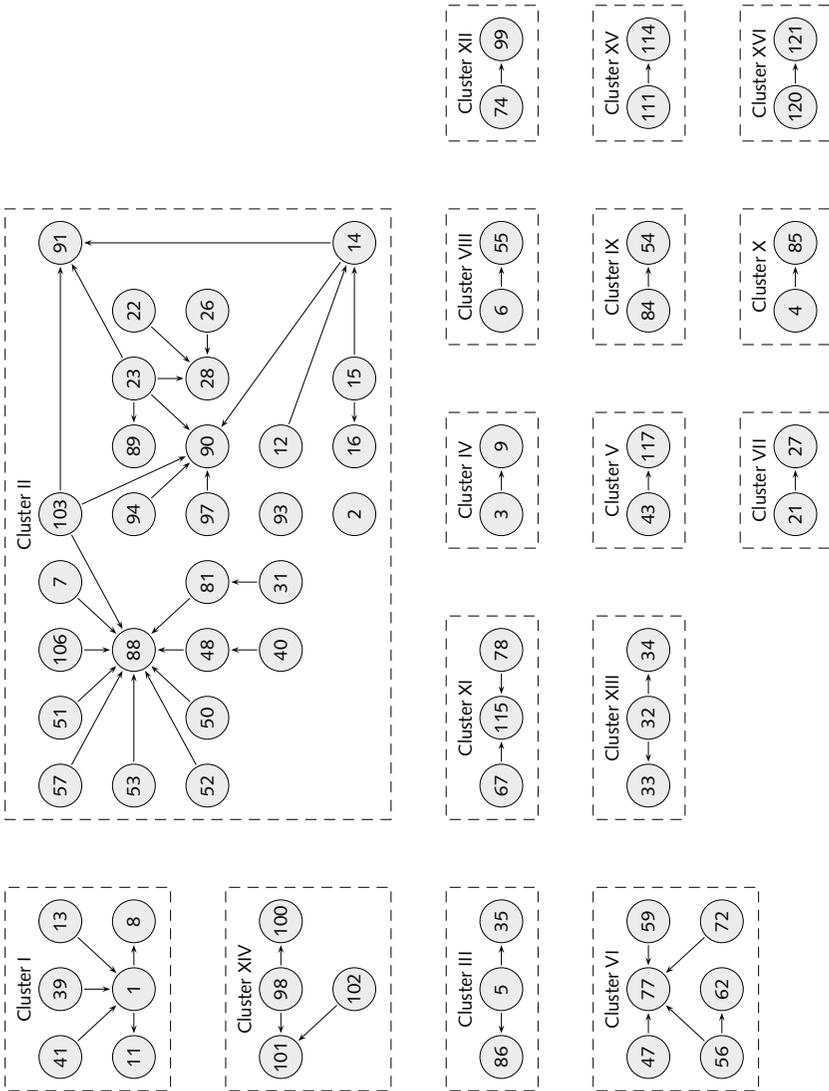


FIGURE 1 Clusters in the UK economy for 1995 based on the Diagonalization Method

identified clusters is that this problem remains unsolved no matter which of the methods is used.

The largest cluster (II) consists of as many as 28 industries which are rather diverse in terms of their activities, ranging from Forestry through Textiles and Distribution (both wholesale and Retail) to Con-

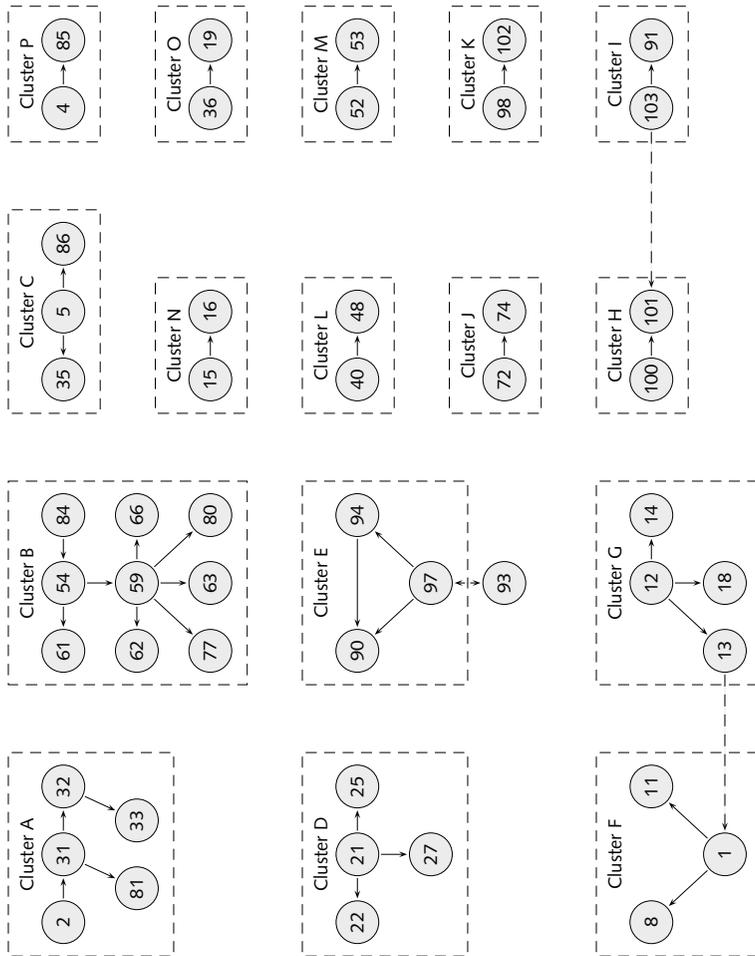


FIGURE 2 Clusters in the UK economy for 1995 based on the Modified Diagonalization Method

struction and Transportation. The high level of activity diversification in this mega-cluster poses some difficulties when one tries to give it a name. This cluster could be, for example, referred to as the Wood-textile-construction cluster, because all of these kinds of activities are strongly represented within its structure. However, almost everyone will agree with us that this name is rather ungainly. No matter whatever name this cluster is given, it is more important that it, in fact, obscures the actual relationships among industries constituting the cluster structure

since some sub-clusters are likely to be sensibly singled out. One such sub-cluster might include, for example, such industries as Forestry (2), Wood and wood products (31) and Furniture (91). Another one might consist of Textile weaving (22), Textile finishing (23) and Other textiles (26). Furthermore, Sugar (15) and Confectionery (16), Cement, lime and plaster (52) and Articles of concrete (53) as well as Plastics and Synthetic resins (40) and Plastic products (48) are other exemplifications of pairs of industries which should be probably considered as sub-clusters of the mega Wood-textile-constriction cluster.

Other clusters, excluding the mini-clusters mentioned above, suggested by the DM seem to be better defined. The Agro cluster (I) includes such industries as Agriculture (1), Meat processing (8), Dairy products (11), and Animal feed (13), Fertilisers (39) and Pesticides (41) as well. Included in the Energy cluster (III) are only three industries, namely Oil and gas extraction (5), Coke ovens and refined petroleum (35), and Gas distribution (86). As large as the Agro cluster is the Metal and Machinery cluster (IV) with six industries, which is followed by the Connection and Financial cluster (XIV) with four industries: Banking and finance (100), Insurance (101), Auxiliary financial services (102) as well as Postal and courier services (98). Two other clusters identified by the DM are the Paper cluster (XIII) and the Weapons and Shipbuilding cluster (XI) each of which consists of three industries.

Figure 2 shows the clusters obtained by means of the MDM. As mentioned above, the number of clusters identified is the same as with the DM, but one can see that there exist substantial differences in terms of the composition of each of them when comparing the two alternative approaches presented here. Note also that unlike the DM, the MDM provides information about the inter-industry relationships of two kinds. In order to distinguish them, a full line is used to denote inter-cluster relationships among industries, whereas a dotted line means external relationships where out of two intertwined industries one is outside clusters. There are only three such external relationships in the figure.

One can see that now the largest is the Metal and Machinery cluster (B) with nine intertwined industries. It is useful to state right at the beginning that the results based on the MDM, with the exception of the Energy cluster (C), in which the component industries are exactly the same as those obtained by means of the DM, and despite the same labels (names) in some cases as previously used, the component industries of the respective clusters are completely different under the MDM. The cur-

rent Metal and Machinery cluster is composed of such industries among others as Metal forging and pressing (59), Mechanical power equipment (62) and Motor vehicles (77), which were previously classified as belonging to cluster IV as well as Iron and steel (54) and Miscellaneous manufacturing and recycling (84) grouped the first time into the two-element cluster IX. It also deserves to be emphasized that some industries in this cluster, mainly Other metal products (61), General purpose machinery (63), Special purpose machinery (66), and Aircraft and spacecraft (80), were set aside when using the DM.

The subsequent Wood and paper cluster (A) is ranked second with respect to its size. Out of five industries included within it, three (Forestry (2), Wood and wood products (31), and Furniture (81)) were originally in cluster II, whereas the following two (Pulp, paper and paperboard (32) and Paper and paperboard products (33)) were previously grouped into cluster XIII. The Textiles cluster (D), on the other hand, is formed partially from cluster VII (Textile fibres (21) and Knitted goods (27)) and partially from the mega cluster in which Textile weaving (22) was previously classified.

Interestingly, the Transportation and telecommunication cluster (E) is entirely formed by breaking down the mega cluster identified by the DM. One can, however, see that Railway transport (93) and Ancillary transport services (97) are here connected via an external bi-directional relationship, and not what is suggested by the DM. Also, in the case of mini-cluster I we find that it emerged from the same mega cluster, but that now there exists an external relation between this cluster and cluster H entirely formed by breaking down the Connection and Financial cluster (XIV).

The last two clusters that will be given attention are clusters F and G. The former emerged as a part of the Agro cluster (1), whereas the latter consists of Grain milling and starch (12), and Bread and biscuits (14) being previously grouped into the mega cluster as well as Animal feed (13) which previously belonged to the Agro cluster and is now revealed to be externally interrelated with Agriculture (1) from cluster F.

Another way of dealing with externally interrelated clusters is by treating all the individual clusters among which there exist external relationships as a single cluster with sub-clusters. Following this approach results in joining the pairs of clusters F and G as well as H and I, previously treated separately.

A desirable feature of any method for identifying clusters of indus-

TABLE 2 Comparison of the strength of identified relationships under the two alternative methods

	Diagonalization Method			Modified Diag. Method		
	(1)	(2)	(3)	(1)	(2)	(3)
Q1.	0.009	0.000	0.000	0.013	0.000	0.000
Mean	20.336	8.920	5.813	25.339	10.111	7.772
Median	1.721	0.790	0.547	2.141	0.925	0.700
Q3.	102.227	21.292	18.453	102.831	27.020	50.767
Std. deviation	796.375	93.281	96.200	486.315	117.746	744.978

Note that all figures are in £ million.

tries is that it should produce the same results independently of which of the alternative matrices is used as a basis for calculations. As mentioned above, the DM has this feature which becomes immediately obvious when taking the manner of forming the  $R$  matrix (see (4)) into account. But, it turned out that the MDM also results in always forming the same clusters for intermediate deliveries, input and output coefficient matrices. Only using the Leontief inverse matrix produces different clusters, and sometimes the differences were rather essential. Nevertheless, this disadvantage still appears to be outweighed by its benefits in uncovering clusters of better transparency when compared with the DM. A more important question, however, is whether both methods perform comparably in terms of the strength of identified relationships among industries within and outside the clusters. To answer this question some helpful descriptive statistics were computed for the intermediate deliveries matrix. The results are reported in table 2.

Due to the more careful way of assessing the significance of inter-industry relationships applied by the MDM, in that some of them are classified as external ones, it should be expected that the inter-cluster relationships will be stronger than those suggested by the DM. As one can see, this anticipation finds full confirmation from the figures in table 2. Mean inter-cluster flow under the DM equals over £20 million, whereas using the latter method it is a further £5 million greater. In addition to this, it turned out that the dispersion around average value measured by standard deviation for the MDM is approximately 60% of that obtained under the former method. On the other hand, for the same reasons we find that the average values of flows and their standard deviations between industries within clusters and outside them, as well as among in-

dustries beyond clusters, are both greater in the case of the MDM as compared to the DM.

### Conclusions

This paper aims at improving methods designed to identify industry clusters by explicitly distinguishing between an internal and external relationship depending on whether two intertwined industries are grouped into the same or different clusters, or whether one of intertwined industries is classified outside the clusters. The most interesting finding of this study is that the MDM appears to produce a resultant cluster structure which is superior in some respects to that of the alternative method. In particular, the cluster structure under the MDM seems to be more transparent and more easily interpretable. Furthermore, as our experiment has shown, using this method does not necessarily entail worse performance in terms of the strength of identified relationships among industries within and outside the clusters. On the contrary, they even appear better.

We are, however, aware that the proposed method still leaves unsolved many other problems that one can encounter in investigating the industry clusters in a real-world economy. These include, for example, the so-called mini-cluster problem, and some inconvenience rooted in the fact that the choice of a suitable level of significance under the MDM may still be regarded as rather arbitrary. Perhaps further theoretical and empirical efforts in this field will help to overcome the common drawbacks of methods of identifying industry clusters, and contribute to reducing the extent of arbitrary decisions in these kind of analyses.

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# *The Impact of Ad Characteristics on Adolescents' Attitudes Towards Antismoking Ads*

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Smoking exerts a considerable burden not only on those who smoke but just as well on society at large. In response, governments and institutions often resort to advertising which aims to discourage smoking. Unfortunately, our knowledge of the workings of antismoking advertising is detrimentally limited. In particular, the literature delving into the impact of antismoking ad characteristics (e. g., ad content, valence, intensity) on the overall effectiveness of antismoking advertising is scarce and contradictory. This empirical study aims to enhance the knowledge of antismoking advertising by presenting results of the survey involving Slovene adolescents. The adolescents were first exposed to advertisements of different antismoking ad contents (for the purpose of this study the term 'ad content' refers to types of appeals used in antismoking advertising), ad valence and intensity, and later invited to respond to a number of questions measuring their attitudes toward the ads, their attitudes toward smoking, their intentions to smoke, etc. The results indicate that while the different intensity and valence of ads produce varying attitudes toward the ads, we could not confirm these differences based on ad content. Also, we found that adolescent smokers respond to antismoking ads differently than do their nonsmoking peers. Our findings offer several important implications for antismoking advertisers and the research community interested in the workings of antismoking advertising.

*Key Words:* smoking and adolescents, antismoking advertising, attitudes toward antismoking ads

*JEL Classification:* M3, M31

## **Introduction**

Cigarette smoking has been repeatedly shown to result in a number of serious health risks. In addition, smoking, the world's leading preventable addiction, involves a number of non-health related drawbacks such as

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bad skin, yellow teeth, reduced athletic performance, bad breath and others. These burdens not only afflict those who smoke, but also weight society at large. For example, the unnecessary deaths, the decreased quality of life, the increase in public health costs and the significant losses in productivity represent only a few of the heavy burdens imposed by smoking (Andrews et al. 2004). In response, considerable effort has been dedicated to averting the public from consuming tobacco products. In particular, the most vulnerable groups, such as the adolescents, have repeatedly been cautioned against smoking (Smith and Stutts 2003). Undeniably, marketing communication has played a significant role in these attempts to influence consumer behavior (Wakefield et al. 2003). However, the effect of antismoking advertising could be significantly increased through a better understanding of its workings. This study aims to enrich the knowledge pertaining to anti smoking advertising by focusing on the adolescents' attitudes towards antismoking ads. The research survey is set in Slovenia, where the elected segment and its engagement with smoking have proved exceedingly problematic.

Slovenia has not been immune to the afflictions caused by smoking. For instance, according to the National Institute for Health Safety (IVZ 2007), 15 percent of preventable deaths in Slovenia can be attributed to smoking. While the overall proportion of smokers in the general population has decreased significantly during the past decade (i. e., from 28.2% in 1994 down to 23.7% in 2001), the number of teenage smokers has increased significantly in recent years (CINDI 2005). For example, the European School Survey Project on Alcohol and other Drugs reports a shocking increase in smoking among the 15- and 16-year-old group (ESPAD 2003), with the percentage of smokers in this age group having swelled from the initial 16.4% in 1994 up to 25.7% in 1999. Similarly, the Health Behaviour in School Aged Children (HBSC) – cross-national study sponsored by the World Health Organization – ranks Slovenia as the fourth among 35 countries/regions with the highest percentage of habitual 15–16 year-old smokers (IVZ 2007). Evidently, the copious efforts to discourage smoking through antismoking advertising, antismoking legislature, and other related public policies, have largely proven ineffective with the Slovene teenage segment. This empirical study offers some insights into the workings of antismoking advertising, thus attempting to contribute toward an increase in the effectiveness of the antismoking campaigns aimed at the adolescent segment. Specifically, the objectives of this research were to examine the prevalence of cigarette

smoking among various adolescent groups, to investigate differences between teenage smokers and nonsmokers in their attitudes toward smoking in general and toward antismoking advertisements, and to explore teenagers' responses to various types of antismoking advertisements developed specifically for the purpose of this study.

### **Theoretical Background**

There are a number of gaps and inconsistencies in the literature addressing the effect of antismoking ad characteristics, such as the ad content used, or the valence and the intensity of the ad on the overall effectiveness of antismoking advertising. For example, after conducting an elaborate study, Pechmann and colleagues (2003) conclude that ads depicting social disapproval of smoking are more effective than those highlighting the long-term health risks, or the shrewdness of tobacco marketing. Conversely, Goldman and Glantz (1998) argue that focusing on the tobacco industry's marketing tactics is most effective, but concur with Pechmann and colleagues' findings regarding the ineffectiveness of ads addressing health concerns. Conversely, Bierner and co-authors (2004) conclude in their research that ads focusing on health threats result in better appraisals than alternative message themes. Yet in another study, Smith and Stutts (2003) conclude that while ads communicating long-term health concerns can be effective with female adolescents, the male participants respond much better to ads addressing short-term cosmetic concerns (e. g., bad breath, yellow teeth, bad skin, etc.). Unfortunately, other ad contents used in antismoking advertising, such as depicting the negative impact of smoking on bystanders (e. g., passive smoking) and portraying the non-health related disadvantages of smoking have received limited attention in the literature (Pechmann et al. 1994; 2003).

Considerable divergence can also be observed in the literature delving into the role of ad intensity (strong vs. moderate advertisements) and ad valence (positive vs. negative advertisements). Intensity refers to the gravity of the consequences linked to the advertised behavior (Reardon et al. 2006; Wolburg 2004). In this stream of research, researchers generally resort to Rogers' (1983) protection motivation theory, which identifies four cognitive variables affecting an individual's fear arousal that in turn leads to the adoption of the advocated risk-reducing behavior: the threat severity, the audience's vulnerability to the threat, the audience's perceived self-efficacy at performing the promoted behavior and the perceived response efficacy of the promoted behavior. Studies fol-

lowing this school of thought generally found that advertisements portraying threats of high intensity yield higher fear arousal, thus increasing ad effectiveness of promoted behaviors than ads of low intensity (e. g., King and Reid 1989; Laroche et al 2001). However, evidence to the contrary can also be found in the literature (Smith and Stutts 2003; Wolburg 2004). Similar reservations apply to the literature discussing the role of ad valence (i. e., positive vs. negative framing). Antismoking advertising can either stress the benefits of avoiding tobacco (positive framing), or focus on the losses incurred by smokers (negative framing). Negatively framed antismoking ads are more customary, with the majority of antismoking stressing negative consequences of smoking, and aiming to induce fear of and distaste for smoking. Shadel (2002) argues that it is this failure to frame positive ads that frequently hinders the effectiveness of antismoking advertising. Further, it has been suggested that the effectiveness of positively/negatively framed advertising is moderated by type of benefit/threat (Robberson and Rogers 1988), type of promoted behavior (Rothman et al. 1999) and audience characteristics (Maheswaran and Meyers-Levy 1990). Accordingly, negative messages (e. g., health threats of smoking) are believed to be superior when addressing a highly involved audience, when promoting behavior with an uncertain outcome, or addressing health issues. Conversely, positive messages have been found superior in situations of low-involvement and with appeals to self-esteem.

### **Hypothesis Formulation**

The presented discrepancies in the literature prevent us from formulating an extensive number of clear-cut hypotheses, particularly as most of the existing empirical studies in the field have been conducted on respondents in Western, mature market economies rather than transformational economies of Central or South-Eastern Europe. While it is often suggested in the literature that there is a global teenage segment, recent studies suggest that adolescents from different cultures respond differently to advertising stimuli (Laroche et al. 2001; Reardon et al. 2006). As a result, the research presented here is predominately of an explorative nature. Nevertheless, our analysis will benefit from sketching out some hypotheses based on existing conceptual and empirical evidence.

The first set of hypotheses is related to differences between teenage smokers and non-smokers with respect to their attitudes towards smoking and their attitudes towards various types of antismoking advertise-

ments. Consistent with protection motivation theory, Pechmann and colleagues (2003) demonstrate that the effectiveness of antismoking advertising depends not only on the severity of risks attached to smoking as depicted in antismoking advertising, but also on the perceived vulnerability to those risks, the perceived self-efficacy at performing the advocated risk-reducing behavior, and the response efficacy of the advocated behavior, as well on the perceived benefits of smoking and the perceived cost of abstinence. It is clear that the smokers' perceptions of the benefits of smoking and the cost of quitting will not be identical to the perceptions of those who do not smoke. Thus, smokers are expected to hold a more positive attitude toward smoking, and they are also expected to react less favorably to antismoking advertising. This position is further supported by Wolburg (2004) who demonstrates that with smokers, antismoking advertising is more likely to produce defensive behavior such as defiance, denial and other types of counter-productive behavior. Such a counter-productive defensive stance is especially likely to be adopted when young smokers are exposed to exceedingly intensive antismoking advertising (Wolburg 2004). Therefore, adolescent smokers are expected to form less favorable attitudes towards antismoking ads in comparison to nonsmoking adolescents.

*HYPOTHESIS 1A Teenage smokers exhibit a more positive attitude toward smoking in comparison to their non-smoking peers.*

*HYPOTHESIS 1B Teenagers exhibiting a greater intent to smoke in the future will tend to have a more positive attitude toward smoking.*

*HYPOTHESIS 2A When exposed to antismoking ads, teenage smokers will, overall, form less favorable attitudes toward the ads than non-smokers.*

*HYPOTHESIS 2B When exposed to intensive antismoking ads, teenage smokers will form less favorable attitudes toward the ads than non-smokers.*

The second set of our hypotheses tackles the overall differences in the attitudes towards antismoking ads employing varying ad contents (i. e., themes), ad valence and ad intensity in adolescents. Although the existing literature fails to consistently confirm the prominence of specific ad content, the majority of the existing empirical findings confirm differences in appeal effectiveness (e. g., Goldman and Glantz 1998; Smith and Stutts 2003). Four distinct ad contents were used in our study: (1) health content (health threats/benefits), (2) other-centered content (pos-

itive/negative impact on bystanders), (3) social approval content (acceptance/disapproval of others), and (4) well-being content (impact on own well-being). With respect to the message valence, the literature suggests that positively framed antismoking ads are perceived more favorably by adolescents (Shadel 2002). Indirect support for positive framing of ads can also be found in Maheswaran and Meyers-Levy (1990) who argue that positively framed ads work better with low-involvement audiences, and in Rothman et al. (1999) who claim that when certain behavior has a relatively certain outcome, positive ads should be used. According to these three studies, positively framed ads will work better with the adolescent audience who exhibit a fairly low involvement in issues related to health protection. What is more, positively framed ads are expected to work better because the outcomes of smoking are perceived as relatively certain (i. e., by the time they reach their teens, the adolescents are well familiarized with the negative outcomes of smoking). On the other hand, empirical findings in studies delving into ads of varying levels of outcome intensity seem more ambivalent. While a number of moderating variables between fear arousal and ad effectiveness have been identified in the literature, strong (fear arousing) ads have been found to discourage smoking (Hale and Dillard 1995; Laroche et al. 2001). Nevertheless, the individuals' perceptions of risk often prove fairly arbitrary, and grave messages sometimes prove less effective than do more moderate ads. An excessively intensive antismoking message can provoke detrimental defiance from the audience (Wolburg 2004), indicating that intensive ads may produce negative attitudes toward antismoking ads.

Based on the existing literature we posit that the adolescents form distinct attitudes toward antismoking ads based on ad content employed, based on the ad valence and ad intensity. Specifically, we expect that some ad content categories (i. e., emphasis on health, impact on others, social approval and general well-being) will produce more approving attitudes than others. Moreover, positively framed ads are expected to produce more favorable attitudes towards the ad, and ads of different levels of outcome intensity (i. e., linked to the strength or seriousness of consequences of smoking) will yield significantly different responses of adolescents to antismoking ads.

*HYPOTHESIS 3 Overall, there will be significant differences in the respondents' attitudes towards the ads across four categories of ad contents employed in this study.*

**HYPOTHESIS 4** *Overall, the respondents exposed to positively framed ads will form more favorable attitudes toward the ads in comparison to those exposed to negatively framed ads.*

**HYPOTHESIS 5** *Overall, there will be significant differences in the respondents' attitudes towards ads of high vs. moderate intensity.*

### **Research Methods**

To test the specified hypotheses, data were generated in three Slovene high schools and technical secondary schools, surveying 480 adolescents aged between 14 and 19. Preceding discussion in this paper clearly designates this age group as exceedingly relevant (Pechmann et al. 2003; Andrews et al. 2004). The average age of the students included in our sample was 16.46 years ( $SD = 1.11$ ) with students attending the first through the fourth year of secondary schools having been approximately equally represented. Our sample of teenagers included 270 or 56.3% of boys and 210 or 43.7% of girls.

This study examines teenagers' attitudes towards smoking, their intention to smoke and their responses to various types of antismoking advertisements. The range of advertisement appeal characteristics examined here involves: (1) ad intensity, (2) ad valence, and (3) ad content (theme). As a part of a large cross-cultural project on antismoking advertising (Reardon et al. 2006), sixteen distinct print ads with matching visuals and headlines were developed to facilitate a 2 (high/moderate intensity  $\times$  2 (positive/negative ads)  $\times$  4 (ad content) experimental design. As indicated earlier, the four distinct ad content categories included: (1) health content (health threats/benefits), (2) other-centered content (positive/negative impact on bystanders), (3) social approval content (acceptance/disapproval of others), and (4) well-being content (impact on own well-being). Each of the respondents was presented with one of the sixteen advertisements. Since ads of different valence and intensity were embedded in the four ad content categories, an equal number of adolescent respondents (half of the sample,  $N = 240$ ) was exposed to one of the two valence levels (positive/negative) ads, and to one of the two levels of outcome intensity (strong/moderate) ads. Hence, one fourth of the respondents ( $N = 120$ ) was exposed to each of the ad content categories.

As for the development of advertisements, two artists were initially contracted to create the visuals, i. e., to draw black-and-white cartoon figures in support of the advertisement headlines developed by the researchers. The visuals were later judged for consistency of execution be-

TABLE 1 Construct measures

Constructs and items	Alpha
<i>Intent to smoke (definitely no/definitely yes)</i>	0.908
In the future, you might smoke one puff or more of a cigarette.	
You might try out cigarette smoking for a while.	
If one of your best friends were to offer you a cigarette, you would smoke it.	
<i>Attitude toward smoking (strongly disagree/strongly agree)</i>	*
Smoking cigarettes is:	
Good ... bad	
Appealing ... unappealing	
Pleasant ... unpleasant	
Safe ... unsafe	
Wise ... foolish	
Beneficial ... harmful	
<i>Attitude toward the ad</i>	0.839
How would you best describe the advertisement:	
Good ... bad	
Like ... dislike	
Interesting ... boring	
Appealing ... unappealing	

NOTE \* Two dimensions, see table 2.

tween ads, and the quality of headline representation. In all cases, one set of visuals was judged superior. This set was later employed in the study. In addition, the ads were further tested to ensure the appropriate variation in ad content, valence, and intensity. For example, a pilot sample of pupils ( $N = 92$ ) evaluated the intensity of ads using seven-point semantic differential scales ('plain/vivid'; 'weak/powerful'). When the  $t$ -test analyses showed higher-intensity ads to be rated significantly higher on both scales, the advertisement was accepted, otherwise changes were implemented. Similarly, these tests also included evaluations of positive vs. negative ads and ad content categories. As for the final representation of the stimuli used in the study, an example of the advertisement headline (presented along with a matching cartoon figure to a specific theme) for the *positively framed, low intensity version* was: 'Stop smoking, live healthier', and for the *negatively framed, high intensity version*, the headline read: 'Keep smoking and die!'

The questionnaire included various constructs whereby some of the item measures were taken from the literature and some of them were developed specifically for this project (see table 1). The following constructs were used in this study: a three-item scale measuring the *intent to*

smoke (Pierce et al. 1996), a seven-item semantic differential scale measuring *attitudes toward smoking* (Mitchell and Olson 1981), a nine-item scale measuring the *attitudes toward a particular antismoking ad*. Also, a classificatory question (smoker or non-smoker) and demographics were included in the survey. Considering that all scales were taken from the existing literature in the English language, the guidelines for conducting international consumer research were followed (Craig and Douglas 1999) in the development and testing of the research instrument. All items were translated into Slovene and back into English independently by two bilingual natives. The back-translated scale was then judged by researchers for meaning compatibility. The scale was also pre-tested on a convenience sample of adolescents to ensure its comprehensibility. Modifications of the scale items were made so as to comply with the consumer environment which is culturally distinct from the markets in which most of the measures were originally developed.

All multi-item scales were first tested for unidimensionality of measures and their reliability by conducting an exploratory factor analysis (the principal component method) and examining the internal consistency (coefficient alpha). In the first procedure, the items were kept if their factor loading was at least 0.45 and eliminated if they loaded similarly on more than a single factor. Results of these analyses along with the wording of specific items in each construct are presented in table 1. The three-item scale for measuring the intent to smoke proved very reliable, thus, all 3 items were retained ( $\alpha = 0.908$ ). Conversely, only 4 of the 9 items measuring the attitudes toward particular antismoking ads were retained ( $\alpha = 0.839$ ). The scale measuring attitudes toward smoking yielded two strong dimensions (see table 2): the rational dimension (eigenvalue of 3.12;  $\alpha = 0.77$ ), and the hedonic dimension (eigenvalue of 0.95;  $\alpha = 0.78$ ). As a result, our initial construct (i. e., attitude toward smoking) was broken into two attitude constructs: (1) the teenagers' beliefs regarding the (ir)rationality of smoking (4 items), and (2) the teenagers' perceptions regarding the attractiveness of smoking (2 items). Together, the two factors accounted for 67.9 percent of total variance in this construct.

### Data Analysis and Results

In this section, a review of the survey findings is offered. The results pertaining to the pervasiveness of smoking among different adolescent groups and the adolescents' intentions to smoke in the future are pre-

TABLE 2 Varimax rotated factor matrix of attitudes towards smoking items

Bipolar semantic differential items	Factor 1: Rational dimension	Factor 2: Hedonic dimension	Cronbach Alpha
Good : bad (ASMK 1)	0.685	0.422	0.78
Wise : foolish (ASMK 2)	0.620	0.378	
Beneficial : harmful (ASMK 3)	0.837	0.005	
Safe : unsafe (ASMK 5)	0.755	0.195	
Appealing : unappealing (ASMK 4)	0.210	0.855	0.77
Pleasant : unpleasant (ASMK 6)	0.198	0.875	
Cumulative variance	42.05%	25.85%	—

sented first. Next, attitudes toward antismoking ads are discussed and differences between adolescent smokers and nonsmokers are identified to tease out additional insights into the working of antismoking advertising. Finally, we concentrate on the role of ad characteristics (i. e., intensity, valence and ad content) with respect to ad attitude formation.

#### ENGAGEMENT, INTENTION TO SMOKE AND ATTITUDES TOWARDS SMOKING

First, our data analyses clearly support the grim trend of the increasing popularity of smoking in the adolescent segment. Given a choice to categorize themselves as smokers or nonsmoker, a worrisome 33.3 percent of the participants chose the 'smoker' label. The percentage of smokers is significantly higher than the percentage of teenage smokers in 1999, as reported by ESPAD (i. e., 25.7%). Although due to the methodological and sample differences the two sets of data cannot be compared directly, the data clearly confirms the efflorescence of smoking among teenagers. The percentage of smokers seems to increase with age. Whereas in the case of the 14–16 year old group the percentage of those who categorize themselves as smokers is 28%, the percentage increases to 38.6% with the '17 or above' age group. The percentage of smokers was found to be significantly higher ( $\chi^2$  test:  $p = .001$ ) with the male respondents (i. e., 39.6%) in comparison to female respondents (25.2%).

Second, the results also indicate a relatively high overall intent to smoke with only 37.1% of the respondents failing to foresee her/himself smoking in the future, 54.6% of respondents describing the probability of smoking occasionally as unlikely, and with the exact same percentage

refusing the possibility 'to smoke a cigarette offered by their best friend'. Together with the high percentage of self-professed smokers (i. e., 33.3 percent) this analysis corroborates the worrisome popularity of smoking among Slovene adolescents.

Third, teenagers' attitudes toward smoking were analyzed. As indicated in the Methodology section earlier, an exploratory factor analysis yielded two distinct attitude dimensions: (1) *rational* (e. g., harmful, dangerous), and (2) *hedonic* (e. g., smoking is unappealing, unpleasant). On average, the adolescents exhibit negative attitudes toward smoking. Smoking is generally perceived as bad, unwise, harmful, unappealing, dangerous, and unpleasant. Nevertheless, there are significant differences in the attitudes between smokers and nonsmokers. Smokers perceive smoking as somewhat less irrational ( $t = -4.13, p = 0.000$ ) and by far more attractive ( $t = -13.23, p = 0.000$ ) than do nonsmokers. Hence, our analyses support hypothesis 1a, in that teenage smokers do exhibit a more favorable attitude toward smoking in comparison to their nonsmoking peers. Moreover, a correlation coefficient between the respondents' intention to smoke in the future and their attitude toward smoking was found positive and significant ( $r = 0.425; p = 0.000$ ), thus confirming hypothesis 1b.

#### ATTITUDES TOWARDS THE ANTISMOKING ADS

In analyzing differences between adolescent smokers and nonsmokers with respect to their attitudes toward antismoking ads, we found support for our hypothesis 2a. The ad attitude scores were significantly lower with the smoker group than with the nonsmoker group ( $t = -3.67, p = 0.000$ ). It has also been found that the difference in attitudes between the two groups varies according to ad intensity. The discord in attitudes between adolescent smokers and nonsmokers is especially striking in the case of respondents having been exposed to high intensity ads ( $t = -3.99, p = 0.000$ ). Whereas nonsmokers report, on average, a positive attitude toward intensive antismoking ads, high intensity ads resulted in generally less favorable attitudes among the smokers. Conversely, the smokers and nonsmokers report a more similar attitude toward ads when exposed to moderate ads. In this case, the difference in attitudes toward ads between smokers and nonsmoker is no longer statistically significant ( $t = -1.34, p = 0.184$ ). These analyses confirm hypothesis 2b, in that smokers (in contrast to nonsmokers) demonstrate a lower level of appreciation for intensive antismoking advertising.

As reported earlier, the subjects in this study were exposed to four distinct ad content categories: (1) health content (health threats/benefits), (2) other-centered content (positive/negative impact on bystanders), (3) social approval content (acceptance/disapproval of others), and (4) well-being content (impact on own well-being). One-fourth of our sample ( $N = 120$ ) was exposed to each type of advertisement. Table 3 depicts the means scores for the construct attitude toward the ad by the category of ad content. A one-way ANOVA test was conducted to test the differences in ad attitude scores across the four ad contents. As depicted in table 3, our results do indicate that the adolescents' attitudes toward ads differ according to the ad content, but these differences are not statistically significant ( $p = 0.080$ ). Hence, our data analysis fails to support hypothesis 3.

Lastly, we analyze the adolescents' responses to antismoking ads with two levels of valence and intensity (see table 3). Our analyses show support for hypotheses 4 and 5, as both the valence and the intensity of ads have been found to significantly influence the respondents' attitudes toward the ads. Positively framed ads resulted in more favorable attitudes toward ads than negatively framed ads ( $t = -1.99, p = 0.048$ ). Overall, intensive ads produced more favorable attitudes toward the ad than did moderate ones ( $t = 2.27, p = 0.024$ ). We have shown with previous analyses (hypothesis 2b) that the preference for intensive ads is, in fact, limited to adolescent non-smokers only, whereas the smoker group exhibits aversion to intensive ads. Conversely, the positively framed ads reign supreme across both groups of adolescents, as expected.

### **Discussion**

Our analyses confirm six of the total seven hypotheses tested in this study. First, the results corroborate the worrisome popularity of smoking among adolescents. Both the high number of high school smokers and the adolescents' intent to smoke in the future furthers tress the need to actively engage in antismoking campaigns aimed at adolescents. Smoking is particularly widespread among the older adolescents (i. e., the above 17 age group) and among male adolescents. Interestingly enough, the attitude scores indicate a negative attitude toward smoking both in the non-smoking and the smoking group. Nevertheless, smokers do perceive smoking more favorably than do their nonsmoking peers. It is the perceptions regarding the hedonic elements of smoking (i. e., pleasantness and appeal) that differ most significantly across the two groups.

TABLE 3 Mean scores for the construct *Attitude toward the ad* by type of advertisement

Respondent group/type of advertisement			N	Mean*	SE	SD	
Total	Intensity	Intensive	240	4.34	0.10	1.51	
		Moderate	240	4.64	0.09	1.38	
	Valence	Positive	240	4.36	0.10	1.48	
		Negative	240	4.62	0.09	1.43	
	Ad content categories	Health	120	4.41	0.14	1.57	
		Other-centered	120	4.32	0.12	1.25	
		Social approval	120	4.45	0.14	1.52	
		Well-being	120	4.78	0.13	1.44	
	Smokers	Intensity	Intensive	83	4.85	0.16	1.42
			Moderate	77	4.81	0.15	1.33
Valence		Positive	92	4.78	0.14	1.34	
		Negative	68	4.90	0.17	1.42	
Ad content categories		Health	36	4.59	0.26	1.56	
		Other-centered	45	4.73	0.15	0.97	
		Social approval	35	4.84	0.25	1.49	
		Well-being	44	5.13	0.22	1.46	
Non-smokers		Intensity	Intensive	157	4.07	0.12	1.49
			Moderate	163	4.56	0.11	1.40
	Valence	Positive	148	4.10	0.12	1.50	
		Negative	172	4.51	0.11	1.41	
	Ad content categories	Health	84	4.33	0.17	1.58	
		Other-centered	75	4.08	0.15	1.33	
		Social approval	85	4.29	0.16	1.51	
		Well-being	76	4.57	0.16	1.41	

As a result, antismoking advertising targeting adolescent smokers would do well to aim at reducing the perceived hedonic, and social benefits of smoking, and/or at increasing the perceived hedonic/social costs of smoking.

Second, the study failed to confirm our hypothesis stating that the selected four ad contents produce different attitudes toward ads. The differences in attitudes toward ads employing different categories of ad contents were not as substantial as expected. Previous empirical research

provides inconsistent findings regarding the impact of message theme or ad content (Biener et al. 2004; Goldman and Glantz 1998; Pechmann et al. 1994; Pechman et al. 2003; Shadel 2002). However, in our study we employed experimental research design in an attempt to overcome the methodological limitations of previous studies which were confined to actual television advertisements. According to Biener and colleagues (2004), measuring individuals' responses to actual TV ads may confound the effects of message themes as a result of executional characteristics. Our findings regarding the (lack of) differences in response to various ad content categories would suggest that the content itself does not play a crucial role in advertising effectiveness. On the other hand, this failure may be attributed to the rather limited size of the sample group exposed to each individual advertisement. In view of these and other limitations specified later, further investigations will need to examine the role of ad content on teenage attitude formation towards the ad, and determine the most effective themes and types of antismoking appeals from the perspective of teenagers.

Third, the hypothesized differences in attitudes toward ads based on ad valence and ad intensity were confirmed. Positively framed ads produce superior attitudes toward ads both with smokers and nonsmokers, thus corroborating Shadel's (2002) findings that adolescents respond better to positively framed advertising. This means that more positive outcomes generally tend to raise emotional arousal more than relatively less desirable ones, which offers important implications for advertisers with regard to message framing targeted at adolescents. On the other hand, while our analyses show that more intensive ads produce overall better results than moderately framed ads in our sample, we also found that intensive ads produce very favorable attitudes merely with the non-smoker group, but less favorable attitudes with adolescent smokers. This would suggest that the two segments need to be approached differently. It is crucial for advertisers to realize that smokers and nonsmokers often respond differently to antismoking advertising. In addition to the suggested importance of the hedonic elements of smoking discussed earlier, our results suggest that highly intensive antismoking ads are less appropriate when targeting smokers.

### **Conclusions**

Despite the many efforts on the part of the academic research community to develop firm recommendations regarding antismoking advertis-

ing as well as the efforts of policy makers to prevent and reduce teenage smoking in various countries, recent studies found specific antismoking announcements to be less than effective, sometimes even counterproductive (Farrelly et al. 2002; Reardon et al. 2006). Hence, this study sought to shed some light on attitudes towards smoking and antismoking ads among adolescents in Slovenia and on the effects of different antismoking ads on teenagers' attitudes towards such advertisements. Rather than measuring antismoking advertising effectiveness directly, this research examined respondents' attitudes toward different antismoking ads as mediators of ad effectiveness. Attitudes toward advertising have been previously shown to determine the overall effectiveness of advertising (Mehta 2000). In particular, attitudes toward advertisements were found to be an important mediator of advertising effectiveness, both in terms of the impact the ads have on the audiences' cognition, and in terms of the impact such ads have on individuals' behavioral intentions (Lutz et al. 1983).

The findings of this study carry several important public policy implications, as well as some interesting pointers for further academic research on the selected topic. In particular, our study delved into the effectiveness of various types of ad contents, ad valence and ad intensity in antismoking messages. This knowledge is important in the design of public service announcements as it can facilitate policy makers and advertisers in their decision-making regarding the specific themes to be used in advertisements. Moreover, it offers insights into whether antismoking advertising should focus on the threat of smoking or the benefits of nonsmoking, and the level of relative emphasis on seriousness of the consequences that are linked to the advertised behavior while employing various themes and threats/benefits.

In addition to confirming the worrisome trends in adolescent smoking, the presented treatise puts forward several suggestions regarding antismoking advertising. First and foremost, antismoking advertising aims at changing a very complex set of attitudes and behavior. Both smoking and nonsmoking adolescents hold relatively negative attitudes toward smoking, which may signal to public policy makers that this segment is receptive to public policy announcements in general and to antismoking advertising in particular. The finding that our sample respondents generally responded significantly more favorably to positively valenced ads than to negative messages implies that the benefit-framed antismoking ads should be more effective than the loss-framed ones for the teenage

segment. Nevertheless, as we found several important differences in attitudes toward the ads between the teenage smoker and nonsmoker group, these also need to be accounted for by policy makers.

Our analyses demonstrated that the two groups (smokers vs. nonsmokers) respond differently to different antismoking appeals. Among these differences the smokers respond less favorably to intensive appeals, a pattern not found with the nonsmoking segment. This would suggest that smokers and nonsmokers should be approached by distinct antismoking campaigns, one aimed at preventing new smokers from adopting the habit and that other one focusing on persuading existing smokers to quit. Whereas both groups respond more favorably to positively framed ads, only nonsmokers exhibit a preference for intensive ads. As a result, intensive antismoking ads produce favorable responses from those who have not yet succumbed to smoking, whereas smokers are bound to react less favorably. With smokers, moderate ads can work just as well (if not better) when aiming to encourage adolescent smokers to abstain from smoking. This is consistent with Wolburg (2004), who suggested that the negative reactions of smokers to intensive ads (e. g., defiance, denial) can be avoided by employing moderate ads, and by incorporating an approach aimed at supporting the adolescents' efforts to quit, instead of merely bombarding them with deafening messages. Future research delving into the effectiveness of such 'support oriented' ad contents can offer invaluable insights into the workings of antismoking advertising with the adolescent smokers. A support oriented approach will necessarily demand a well-rounded strategy of communication with adolescents that transcends the antismoking advertising alone. Personalized communication tools such as workshops, support groups and mentoring provide necessary supplements to antismoking advertising to adolescents – yet another topic to be investigated in further research.

Clearly, much additional work is required to achieve a comprehensive understanding of the workings of antismoking advertising. In this paper we aimed to produce a much needed contribution toward a systematic study of ad characteristics and their impact on adolescents' attitudes toward antismoking advertising in Slovenia. Nevertheless, the findings of this study should be viewed keeping in mind the limitations inherent in our research. For one, the limited sample size proved detrimental in testing the hypotheses concerning the differences in teenagers' attitudes towards various themes or ad contents. A more extensive survey would have a greater chance of success in teasing out these differences.

Moreover, the sensitive nature of our topic for some teenagers (despite the assured anonymity in this research, the youngsters may conceal their smoking from their parents) may have resulted in 'socially desired' responses (Hult et al. 1999). In addition, the constructs measured in the study (i. e., attitudes and intentions) are only a crude indicator of actual behavior. In light of the growing prevalence of smoking among Slovene adolescents, however, future research opportunities into effectiveness of antismoking advertising abound.

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# *Online Gambling: Today's Possibilities and Tomorrow's Opportunities*

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With the development of new information and communication technologies (ICT), above all computers and the internet, new forms of online commerce have emerged. The gambling industry began using the power of the rapidly developing virtual market by offering its services in online casinos. The phenomenon of online gambling has encouraged researchers to direct their work into various areas, including the characteristics or profile of online gamblers. In light of the data on the growth of the market for online gambling it is evident that, in the relation between the many types of traditional and online gambling, visits to traditional casinos predominate, as do predictions about the development of the internet. We therefore decided to examine the characteristics of gamblers in traditional casinos and to determine what percentage of them also gamble online, as well as to establish their profile. The aim of the research was to determine how their characteristics in respect of the development of the internet and the growth of the market have influenced the subsequent development of traditional and internet casinos. We predict that both types of gambling, each in its own way, will compete for gamblers. For traditional casinos the best solution seems to be opening their own online casinos; online casinos will have to remain abreast of the development of the internet and communication technology.

*Key Words:* online gambling, online casino, online gambling product  
*JEL Classification:* L10, L83

## **The Virtualization of the Global Market and Online Gambling**

Games of chance have a long history. The first registered casinos in Europe arose at the outset of the 17th century, and a century later casinos appeared in America. The development of games and casinos initially followed the development of societal life, whereas in the past century

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they have to a great extent followed the development of technology. The first true 'revolution' was the possibility of betting over the telephone; today such possibilities are enabled through use of computer technologies, as the phenomenon of the internet has brought games of chance into practically every household.

Mass use of the internet, which has been made possible through the ease of access to the media and technology that is available inexpensively, has changed the manner of thinking of many who offer their goods to the market. The first were salesmen who were soon to recognize the advantages of this widespread technology.

The internet has not only become a global communication medium but is also becoming a global tool for global merchants trying to sell their services on the virtual market. Studies suggest a rising trend of consumption in the global virtual market; in the last years it has been rising by more than 30 percent annually.

The growth in internet use is best illustrated by the data, albeit based on the American market, indicating that it took the internet seven years to enter 30% of households, the telephone 38 years, and electricity 46 years (Shaffer 2004). Studies show that the most widespread internet activity is e-mail, with 87.9% prevalence among internet users, followed by web surfing or browsing, reading news or searching for information about entertainment, hobbies, travel, and buying online; playing games is in ninth position, with 26.5% prevalence among internet users (Cole et al. 2003).

The knowledge of virtual merchants and the power of the rapidly growing global market were employed by the gambling industry when it began offering its services in the virtual space about ten years ago. The first online casino was Interactive Casino, Inc. (ICI), which first appeared on August 18, 1995 with 18 different casino games, online access to the National Indian Lottery, and plans to launch an Internet Sports Book (Janower 1996; Subhajt 2006; Lipton 2002; Karadbil 2000). Since the beginning of widespread introduction of the internet into domestic settings, the number of online gaming sites has increased at a staggering rate each year. In May 1998 there were approximately 90 online casinos, 39 lotteries, 8 online bingos and 53 sports books. Within a year, these figures had increased to 250 online casinos, 64 lotteries, 20 bingos and 139 sports books (Wood and Williams 2007). Research indicates that from 2000 to 2002 there were between 1500 and 1800 active online gambling sites (Eadington 2004; Sinclair et al. 2002; Unites States General Account-

ing Office 2002), and at present between 2300 and 2500 such sites are in operation (Clark 2005; Ranade et al. 2006). This rapid growth in the number of sites in recent years may be tapering off, as the big companies buy out smaller sites (Ranade et al. 2006).

Parallel to the growth in internet casinos is a growth in development of suitable information solutions that help promote offers that are both credible and gambler-friendly. Online casinos, which are striving to become and remain serious providers of games of chance, are investing in those information solutions which offer uninterrupted online support to the gambler, prevent criminality and ensure the credibility of the operations, because this is what offers them a competitive advantage.

## **Characteristics of Online Gambling**

### DEFINITION OF ONLINE GAMBLING

Gambling has many different meanings depending on the cultural and historical context in which it is used. In western society, it usually has an economic definition, referring to 'wagering money or something of material value on an event within an uncertain outcome with the primary intent of winning additional money or material goods'. Typically the outcome of the wager is evident within a short period of time (see <http://www.sportspool.com/gambling>). Cabot (1999) defines gambling as any activity in which a person risks something of value on the outcome of an uncertain event, in which the bettor does not exercise any control or is determined predominantly by chance.

The notion of online gambling is, like the phenomenon itself, relatively new. In the relevant literature the following expressions that describe gambling over the internet can be found: 'online gambling', 'internet gambling', 'casino gaming on the internet', 'cyber gambling', 'online wagering' or 'remote gambling'. It should be noted here that two main types of gambling occur on the internet: gaming (casino style games) and betting or wagering (racing and sports events). The generic term 'gambling' refers to both types. In the context of this research and article, we will use the term 'online gambling' to mean playing casino style games over the internet.

We would also like to point out that other expressions can be found in the literature that refer to the notions of 'online' and 'internet gambling' and are closely related to the online gambling industry. Let us name some of them: 'internet-gambling sites', 'online gambling web sites', 'inter-

net gambling industry', 'online gambling industry', 'interactive/internet gamblers', 'gambling market', 'internet casino player', 'internet gambling operators', 'internet gaming product', 'online gambling services', 'internet gaming market', 'internet virtual casino', and similar.

Online gambling is possible via two technologies: the internet and digital television. It is characterized by three factors: electronic operation, service-based organization in the field of gambling, and consumers (or buyers) of gambling services. In the paper we speak of online gambling when the key activities typical for games of chance (usually taking place in a traditional casino) occur in the virtual space with the help of the internet.

To realize the idea of an online casino, a suitable piece of technology is required which represents a complex information solution. A basic requirement for an online casino provider or an online games provider is to have a relatively powerful server, appropriate software and suitable support activities, all interconnected in a logical way that creates a unified and integrated system. On the other hand, a player needs a computer equipped with software that allows access to the internet and supports graphically demanding programs. The link between the two is the internet – a virtual medium between the casino and the player.

We can establish that online gambling is a global activity, from both a technological and an organizational viewpoint. In terms of technology, this is understandable because it works via the internet; in terms of organization, this is less evident. The cause of such an 'organizational globality' rests in the indeterminacy of the legal operating of online gambling. Due to the lack or even absence of regulation, online casinos have discovered means of operating out of several countries simultaneously. As certain authors indicate (Cabot 2001; McMillen 2003; Balesta and Cabot 2002), online casinos often carry out their activities such that they have their headquarters, server for games and support centres dispersed over various locations in several countries, depending on the regulations of each individual country.

Eighty-five jurisdictions around the world currently regulate some form of online gambling, but most such businesses are clustered in a few places. The vast majority of internet gambling sites are located offshore from North America, with a large concentration in Antigua (Cabot 2001). But many anticipate that online gambling businesses will be drawn to the United Kingdom as it implements its Gaming Act 2005, which significantly liberalizes regulation of online gambling. Taxes on online

gambling will be higher in the UK than in other jurisdictions, but doing business in the UK offers substantial advantages, such as a stable political environment, vibrant capital markets, a reliable communications infrastructure, a large pool of skilled workers and regulations that should inspire confidence among customers and investors (Stewart 2006; Ranada et al. 2006).

Otherwise, the legal operating of internet gaming follows the three fundamental approaches which came into force in 1997:

- the Australian approach, which supports internet gambling, though only in accordance with licensing, regulations and taxation,
- the European approach, which is moving towards allowing internet gambling with controls and limitations for residents of the individual country,
- the American approach, where online gambling is not desired and should be prohibited.

#### A COMPARISON OF ONLINE AND TRADITIONAL GAMBLING

The gambling process in an online casino differs from the one in a traditional casino, even though it imitates some of the latter's elements. The most obvious similarity between an online casino and a traditional casino is in the selection of games. The whole selection of games typically offered by traditional casinos, e. g. poker, roulette, blackjack and slot machines, is mimicked by online casinos' high quality graphics and special visual and sound effects. The tendency to imitate traditional casinos as authentically as possible is so strong that they even use animation to recreate the casino rooms and people in them. Online players require computers equipped with appropriate software and access to the internet. Once they choose an online casino, they have two options: playing for money or playing free games. If they decide for the latter option, they can either enter their personal data (and thus have the chance of receiving a free prize) or play anonymously without the chance of receiving a prize. Free gambling – the casinos also call it 'practice mode' – is also a great way of familiarizing yourself with the games offered by the online casino and testing them.

Online casinos are striving to offer a selection of games as similar as possible to the one in traditional casinos, however, on the basis of certain features, some differences can still be observed, and only further studies can determine if these can be referred to as advantages or weaknesses.

TABLE 1 Characteristics of online and traditional gambling

Characteristics	Online casinos	Traditional casinos
Language	Multiple languages can be used.	Usually operates in one language.
Currencies accepted	Various currencies can be used, depending on which country the gambler is from.	Normally operates using only one currency.
Means of payment	A wide variety of payment options, various cards are accepted.	The usual means of payment is cash; a limited number of cards are accepted.
Money used	Online gamblers play with real money (they are not required to exchange the money for chips on entering the casino).	Gamblers always exchange money for chips.
Dress code	No requirements, you can play anywhere, wearing whatever you want to.	There are policies and regulations about the dress code; players wearing inappropriate clothing are not allowed to enter.
Free gambling	A definite possibility, usually included in the offer, mainly as a means of attracting players.	A faint possibility, only on special occasions.
Variety of games	A large variety of games.	A limited choice of games.
Accompanying costs	Only includes internet costs.	Includes transport, accommodation and meal costs.

*Continued on the next page*

The most important differences between online and traditional casinos are given in table 1.

### **Development of Online Gambling**

The rapid development of online gambling is not merely a result of technological development, but also of the fact that it is possible to play from anywhere. This has transformed many potential players into real ones and consequently expanded the market of casino services. The casino market thus eliminated its dependency on the physical dimension of being geographically restricted only to a handful of countries and could now extend into infinite dimensions offered by the virtual market, depending only on how quickly and to what degree it was able to conquer it.

The first to sense the opportunity were traditional casinos – the internet provided them with enhanced possibilities to increase their earnings.

TABLE 1 *Continued*

Characteristics	Online casinos	Traditional casinos
Instructions/assistance to players	Offers telephone, fax and e-mail assistance; provides clear instructions regarding game rules and playing techniques.	Usually does not offer additional assistance, such as explaining the rules.
Player privacy	Complete privacy, no cameras, no need to register using a personal ID.	Privacy is ensured only outside the casino; inside the guests are monitored by cameras; they have to identify themselves showing their IDs.
Distracting factors	Fewer disturbing factors, only computer graphics and sounds.	Several factors disturbing factors, which are integral parts of traditional casinos.
Atmosphere, players' well-being	The atmosphere is not competitive, the players can relax.	The competitive atmosphere is more intense.
Accessibility	24-hour access, 365 days a year; access from anywhere in the world where there is an internet connection.	Access (entrance) possible only during operating hours.
Operation costs	Usually lower than in traditional casinos, especially with respect to labour and equipment costs.	Usually very high, especially with respect to labour, equipment and premises costs . . .

According to Dandurand (1999), the internet gave traditional casinos the option to transform and expand their basic, traditional offer to online services. Even though the latter represent a very small portion in the structure of all gambling services, they exhibit a very high growth (Hiller and Cohen 2002). From the first operating site with gambling content in 1995, there are now approximately 2500 sites, and experts estimate that the online gambling market is growing at an annual rate of 20% (Stewart 2006). Current estimates for the annual turnover of the online gambling market are between £500 million and £635 million. Estimates vary, as to how large the online gambling market will become, but a number of reports suggest that the market will reach £4 billion by 2010 (Ranada et al. 2006). Other authors estimate that it will reach the annual level of 528 billion dollars in 2015 (Hartman 2006).

We should also point out that the marketing and commercial opportunities have been detected and embraced by companies that have no direct links with gambling services – they have begun cooperating with

the online gambling industry. McMillen (2000, 2003) lists the following factors that encourage investors to invest in online casinos:

- Online casino market is a rapidly growing market yielding high earnings.
- There are only few legislative restrictions on online gambling market entry, especially in the so-called 'off-shore zones'.
- Costs of creating an online casino are low when compared with those of building a traditional casino.

Aside from the possibilities and opportunities offered by the development of online gambling, we should not ignore the grave dangers that have surfaced in the development of online casinos. Studies have shown that there are three of them: problem gambling, youth gambling and criminality (Ranada et al. 2006). Problem gambling is defined as 'participation in gambling to the point where it causes serious harm to oneself and others' (Ranada et al. 2006). Online gambling causes two types of problems: severe ones like depression, thoughts of suicide, debt, poverty, crime, divorce, and more moderate ones like chasing debts, guilt, concealment, depression, high expenditure (Ranada et al. 2006). Online gambling, as opposed to traditional forms of gambling, is more of a risk for young people. Serious online casinos take efforts to prevent youth gambling through various age verification systems. Controls that seem to work include requesting two independent items of verification (one of which has to be the player's passport) (Ranada et al. 2006). According to some authors (Tresniowski et al. 2003) only a small number of online casinos offer effective mechanisms that prevent access to casinos by children. The third danger the online gambling industry is faced with is criminality. There are three types of criminal activity: hacking, fraud by operators and money laundering (Ranada et al. 2006). Ensuring safety in this area is an aspect all serious providers of online gambling are well aware of; they are trying to find effective solutions that not only ensure safe operation but also boost their reputation on the virtual market.

### **The Study**

Within the development of internet gambling there has been a rapid increase in the number of online gamblers, although the latest studies show that the relation between online gamblers and visitors to traditional casinos still favours the latter. The percentage of online gamblers in 2001 was between 0.2 to 1% in relation to gamblers in traditional casinos (Wood

and Williams 2007). Wood and Williams (2007) also state that these are merely estimates and that they should be confirmed and supplemented by further research. Studies have also shown that the profile of the online gambler differs from that of the gambler in traditional casinos, and that this profile is changing with the development of online gambling offers. The most crucial difference between them appears in connection with their demographic and behavioural characteristics. As researchers have shown, it is also true that some visitors to traditional casinos also visit online ones, which could impact on changes to how traditional casinos operate (Woodruff and Gregory 2005; Wood and Williams 2007).

In line with such findings, the study primarily focuses on identifying the share of traditional gamblers who also visit online casinos. We shall also attempt to outline some general characteristics of online casino visitors and identify the reasons why some of them only go to traditional casinos while others visit both traditional and online casinos. Based on the above, we will attempt to assess the impact the gambling market virtualization could have on the future of traditional and online casinos.

#### SAMPLE AND METHODOLOGY

Because of the fact that the primary purpose of the study was to determine the percentage of traditional gamblers who also gamble online as well as their characteristics, we decided to carry out our survey among visitors to traditional casinos. The methods used were both quantitative and qualitative, as we employed a survey of questions and a semi-structured interview, as we expected that only in such a combination could we satisfy the intentions of the study.

The questionnaire was selected because it enabled us to collect answers to questions about the profile of gamblers and identify the share of those who visit online casinos (the questionnaire can be obtained from the author of the article upon request). The data on players' reasons for visiting a casino were mainly obtained using the questionnaire; however this was not sufficient for an in-depth look into the issues addressed by the study, which is why we decided to conduct semi-structured interviews with the respondents who confirmed visiting online casinos.

The questionnaire contained questions of both closed and half-closed varieties, and the contents of the questions were divided into individual contextual components. For the interview component we prepared the main questions ahead of time, while allowing for the possibility of asking sub-questions to supplement the main questions. We carried out the

interview with each subject by first explaining the intent and goals of the study, ensuring them that all data would remain anonymous and asking them for permission to be taped (in order to facilitate the handling and analysing of the data).

We used random sampling which enables a statistically reliable analysis of the whole population, i. e. at least a 5% accuracy of the estimate, taking into account a 95% confidence interval for the estimated statistical parameter of the population, at the expected value of the statistical parameter. The study included 396 players, 250 of whom were male and 146 female. The whole population of casino visitors in the course of the study consisted of 3214 individuals.

#### RESULTS OF THE STUDY

First we inquired whether the respondents who visit traditional casinos also visit online casinos. 369, or 93.18%, out of 396 respondents answered that they do not visit online casinos, while 6.82%, i. e. 27 gamblers, also visit online casinos. We conducted semi-structured interviews with the group of gamblers who visit online casinos to determine the reasons for their decision. The interviews with a pre-prepared list of key questions were conducted in the period of five days, during the casino's operating hours. Each interview lasted about 35 minutes.

The primary purpose of the study was to search for reasons why certain gamblers only visit traditional casinos, whereas others also gamble online. It was established that these reasons were indelibly linked to the vicinity of a traditional casino as well as the age of the gamblers. The most important but also expected factor for visiting a traditional casino and the reason for not playing online is the proximity of the casino – 80% of respondents live less than 20 kilometres away. As the second-most important factor for visiting a traditional casino 285, or 77.2%, of those questioned expressed the wish to socialize with other gamblers, which is only possible in a traditional casino environment. The third-most important factor for visiting a traditional casino was entertainment options – 212, or 57.5%, of respondents said that they visit the casino for entertainment offers such as concerts, dancing and so on. It should be emphasized here that the desire to socialize is most common in two age groups: in the age group between 21 and 30, and in the age group between 31 and 40. The reasons for visiting a traditional casino also include safety issues – 135, or 36.6%, of respondents are largely afraid of their personal information being abused, sent over the internet. Such fears are

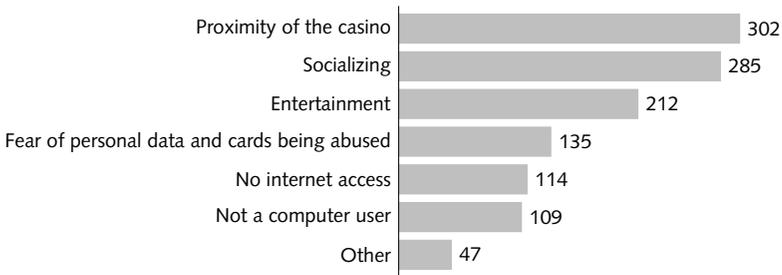


FIGURE 1 Why traditional players do not visit virtual casinos

most pronounced in the age group above 50. Not using the internet or a computer are two factors which are crucial in examining the reasons for visiting a casino. Although studies have shown a strong increase in the use of computers and the internet, there are nevertheless still many people without regular internet access or who do not have a computer at all. 114, or 30.9%, of respondents expressed, as a reason for visiting a traditional casino, that they do not have internet access; 109, or 29.5%, do not use computers. Both groups are predominantly made up of people older than 50 years. 47, or 12.7%, provided other reasons for visiting a traditional casino. The results are shown in figure 1.

The results shown, indicating the reasons for visiting traditional casinos, can simultaneously be understood as reasons for why traditional gamblers do not visit virtual casinos or why online gamblers do visit online casinos. For this reason the results obtained also proved helpful when we were carrying out the interviews.

The visit to a traditional or online casino is actually relatively closely linked to the age of players. As shown in figure 2, in the age group above 50, none of the respondents visit online casinos, which is slightly less than a half of all respondents, i. e. 48.3%. In the age group between 21 and 30, 7 out of 77 respondents also visit online casinos, in the age group between 31 and 40, 13 out of 105 respondents use online casinos, while in the age group between 41 and 50, only 7 out of 85 respondents visit online casinos.

The gamblers who use the services of online casinos were interviewed to determine their general profile. Most of them are males, 23 out of 27 were men and 4 were women. As we have already established in the presentation of the age structure, online players are representatives of the younger generation, the oldest interviewee was 44 years old. Most respondents hold middle or high positions in the organization structure

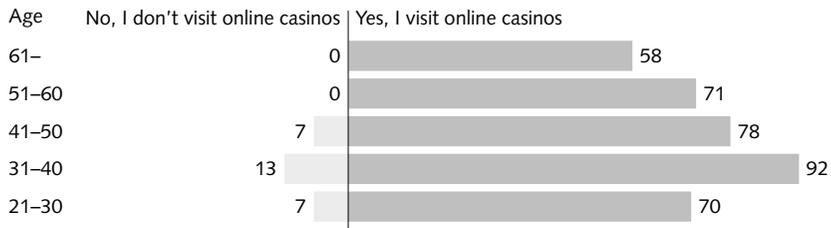


FIGURE 2 Age structure of visitors to online and traditional casinos

of the organizations where they are employed, and have, on average, secondary school or university education. All interviewees use computers and internet on a daily basis and have access to broadband connections. Most of them access online casinos at home, more rarely from their workplace. They have a positive attitude towards the internet and online services and a high degree of trust in the information technology. They do not use the internet to access only online casinos but for other services as well, e. g. online banking, shopping and such.

In the interview we were also interested in how often they visit online casinos and what type of games they play. Our finding was that the majority of respondents visit online casinos once a week or even less frequently, while only 4 respondents play at least twice a week. It is interesting that the respondents visit online casinos on weekdays, mainly from Monday until Thursday, while on weekends, i. e. from Friday until Sunday, they prefer going to traditional casinos. When they gamble online, they almost exclusively play the games at gambling tables and are not very keen on slot machines. When they play over the internet, they make smaller wagers compared to those in traditional casinos. This is not surprising since their average playing time in online casinos is shorter than in traditional casinos.

Since the gamblers who only go to traditional casinos were asked for the reasons behind their decision, a similar question was posed to online gamblers as well. Their main motive for gambling online is the lack of time caused by work and family related matters. 40.74% or 11 respondents stated this as the main reason. It is interesting that more than a fifth of respondents (22.23%) stated that they had visited an online casino only once. They were disappointed with the visit. They believe that online casinos do not offer the same level of adrenalin rush as traditional casinos. They did not return for a second visit because playing over the internet meant playing alone, without their usual company and because

they want to share their experiences with other casino visitors. Consequently, a fifth of respondents do not intend to visit an online casino again.

Almost a fifth or 18.25% of the respondents visit online casinos because of geographical considerations – they live 40–70 kilometres from the traditional casino.

A tenth or 11.11% of respondents gave a large variety of games as the reason for visiting online casinos; online casinos enable them to play games they miss in traditional casinos.

The reasons for visiting online casinos are also privacy and the peaceful environment the players can enjoy while gambling online. 7.4% of respondents claimed that they preferred gambling online since it gave them enough time to think and play in peace. While gambling online, they are not disturbed by other casino visitors.

### **Conclusion**

The development of technology and communication offers numerous possibilities to do business across large distances and opens up various market opportunities. Consequently, the traditional notion of market as a geographically relatively limited space has changed, market activities have moved to the global, geographically unlimited, virtual space. The opportunities of the rapidly growing virtual market were soon noticed by the gambling industry, and gambling services began appearing on the internet. The first to recognize the opportunity were traditional casinos, which saw online games as an addition to their traditional offer and a smart marketing move. As studies have shown, from the first operating site in 1995 to the more than 2500 internet sites currently offering virtual casinos, the online gambling market has been growing at a rate of 20% per year. The development of the internet and communications technology has given rise to the phenomenon of virtual casinos. The article deals with this phenomenon and its development in comparison with traditional casinos, the characteristics of both the online and the traditional gambler, and their influence on the future of gambling.

The phenomenon of online gambling has encouraged researchers to direct their work into various areas, including the characteristics or profile of online gamblers. In light of the data on the growth of the market for online gambling, the fact that in the relation between the many types of traditional and online gambling visits to traditional casinos predominate, as well as predictions about the development of the internet, we

decided to examine the characteristics of gamblers in traditional casinos and to determine what percentage of them also gamble online, as well as to establish their profile. The aim of the research was to determine how their characteristics in respect of the development of the internet and the growth of the market have influenced the subsequent development of traditional and internet casinos.

The study primarily focused on identifying the share of traditional gamblers who also visit online casinos and their reasons for doing so. We established that less than seven percent (6.82%) of traditional gamblers also gamble online. Interestingly, many among them were not impressed by the services of online casinos, so they decided to visit only traditional casinos in the future. We have also determined that the main advantages of online casinos, which attract the gamblers to visit them, are accessibility (no geographical limitations), large variety of games, privacy and a peaceful environment. The reasons for visiting online casinos are exactly opposite to the reasons for visiting traditional casinos: geographical proximity, possibility to socialize with friends and optional additional entertainment. The gamblers who visit online casinos have a positive attitude towards information technology, and are representatives of the younger generation. Such characteristics are also mentioned in other studies in the field which have come to similar conclusions. They state, among other things, that online gamblers are computer- and internet-savvy, that they are younger, that they have above-average education, and that they choose to gamble online because that allows them to play alone. In contrast, traditional gamblers do not visit virtual casinos primarily because they wish to socialize with other gamblers.

We can conclude that online casinos are, in fact, competitors to traditional casinos. Consequently, they face the challenge represented by the virtualization of the gambling market, to which they will have to find an appropriate answer if they want to take their slice of the pie in the rapidly growing market of virtual casinos. There seem to be only two options for traditional casinos: the first is to create their own online casinos, which would be a smart promotional and marketing move, and the second is to transform online gamblers into traditional gamblers at least on weekends.

Without a doubt, online casinos will also attempt to expand their market, mainly by using the developing information technology. Since the findings of the above study show that one of the reasons for avoiding online casinos is the desire to socialize, we could suggest that a possible

solution would be to create interactive links between online gamblers using web cameras. Today the players are still playing against virtual partners but in the future they will be able to see their gambling partners and to socialize with them over the internet. Online casinos of the future will invest a lot of their efforts in the development of technology that will link the players in the virtual space and provide services that offer the kind of socializing that is usually experienced in traditional casinos. Such virtual socializing could also reduce the fear and distrust of online casinos, which is among the main reasons why gamblers still prefer to visit traditional casinos.

Despite the numerous ethical questions and dangers posed by online gambling, it seems that new technological solutions provide new opportunities for the development and growth of the industry. It depends on the wider social environment and the providers of online gambling whether these casinos continue to exist in the future, or else are banned by the legislative authorities.

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### **Important Dates**

*E-registration* through Conference website open: February 1, 2008

*Abstract/Paper submission:* April 30, 2008; all submissions will be subject to a double-blind review process

*Notification of acceptance:* June 15, 2008

*Final Paper submission:* August 15, 2008

*Conference duration:* November 26–29, 2008

### **Registration Deadlines**

*Early registration:* August 15, 2008

*Late registration:* October 15, 2008

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The journal *Managing Global Transitions* is aimed at providing a forum for disseminating scholarship focused on transitions. The journal seeks to publish ground breaking work in management research that will provide integrated and diverse perspectives on the processes of change and evolution in a broad range of disparate fields, including systems theory, leadership development, economics, education, industrial relations, law, sociology, informatics, technology, decision-making theory, and action learning. To further the understanding of transition environments internationally the journal aspires to enhance the availability of case studies and analysis of data from different cultural environments in public, non-profit, and corporate contexts.

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- Footnotes are not permitted. Endnotes are permissible but should be kept to a minimum.
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