An empirical study on application and efficiency of gridded management in public service supply of Chinese Government

Bai XiuYin
College of Humanities and Law, Chengdu University of Technology, Chengdu, China

Muhammad Imran Hanif
Institute of Banking and Finance, Bahauddin Zakariya University, Multan, Pakistan

Li Fensheng
College of Humanities and Law, Chengdu University of Technology, Chengdu, China

Muhammad Shehzad Hanif
School of Management and Economics, University of Electronic Science and Technology of China, Chengdu, China, and

Gu Yinhua
College of Humanities and Law, Chengdu University of Technology, Chengdu, China

Abstract

Purpose – Gridded management in the public service supply is still in the experience exploratory stage, and this paper aims to analyze the inherent logic and operation mode of the gridding mechanism of the public supply based on the existing theory study and practices, and verify its efficiency so as to come to the conclusion whether it could be promoted to a wider range.

Design/methodology/approach – The methodology applied in this paper was case study/deductive induction.

Findings – The grid model in the public service supply needs to be demonstrated completely in theoretical logic and operation principles before it is promoted across the country. Meanwhile, full support of the government is required in terms of service concept, function distribution, technical parameters and infrastructure.

Research limitations/implications – The inherent logic and operation mode of the gridding mechanism of the public service supply needs enough practice tests. The practical test of efficiency analysis of the gridding mechanism of the public service supply is not enough.

© Bai XiuYin, Muhammad Imran Hanif, Li Fensheng, Muhammad Shehzad Hanif and Gu Yinhua. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at http://creativecommons.org/licences/by/4.0/legalcode

This paper is supported by Youth Backbone Teacher Training Program of Chengdu University of Technology. This is the stage research result of the project named Study on Gridding Mechanism of Public Service Supply and Its Efficiency (No. QGXH13-04) of the Information Research Center of Regional Public Management, Sichuan.
Social implications – This paper validated whether the gridding mechanism that originated from China’s urban management can be promoted to all over the country in the public service supply. It provides references for government policy.

Originality/value – This paper constructs a gridded management model for public service provision in urban and rural areas on the basis of an analysis of the plight of traditional model of public service provision, thus delivering the same standard of public service for both urban and rural areas through optimization of resource allocation without requiring more supply and fundamental change to the content of service.

Keywords Chinese Government, Gridded management, Public service supply

Paper type Research paper

1. Background
Gridded management changes the fragmented public resources distribution in urban management of China, and caters a new way for the public service supply. By combining the decentralized and personalized service demands with the sporadic supply mode, this management approach can satisfy the supply and demand of public services to the greatest extent. It has been successfully experimented in over 50 cities, including Beijing, Shanghai and Wuhan, yet it still requires a more in-depth theoretical study for a better theoretical support to affirm if this novel mechanism of the public service supply that originated from China could be promoted nationwide or even worldwide, and how its efficiency could be.

2. Overview of study
A dilemma has appeared in the whole world that the supply of services has increased but the demand of public still cannot be satisfied. It has become a worldwide concern to optimize the public service supply and a crucial matter for the governments to innovate the system to promote the effective supply of public services. Gridded management is introduced into the public service supply in this context.

2.1 Information technology – electronic application in public service supply
In Western countries, the study on grids is predominantly focused in the field of research and development of computer technology, rather than a management method, and up till now, there is no research directly related to the public service supply. Warren (1987) refers to the networking system concept in the supply of public services and reckons that the community public service supply system is a “system of systems” jointly composed by a “horizontal structure” and a “vertical structure”, among which the former is the link of structure and function coordinated by each unit and subsystem within the community, and the latter is the link of structure and function interacted by the community and the external system. Most Western scholars emphasize on the database, standardized information and resources sharing, while Fountain (2014) points out the biggest challenge of the public service supply is to eliminate the conflict among the functional sectors of the administrative organization. In fact, it has been made clear that the information technology will be reasonably combined with administrative management.

With the launching of hundreds of grid research projects, grid application in the USA has improved from the integration of computing resources and information resources from different geographical locations, such as Globus (Legion Project), to the capabilities of information optimization (Condor project), information prediction and scheme pre-order (AppLeS project), and even to the capabilities of satisfying the comprehensive demand of the National Science Foundation, the Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Energy, the Department of Defense and the National Institutes of Health (DOCT project). The nomadic project sponsored by the Office of the
Deputy Prime Minister of UK implants the mobile information technology to the full supply of public services and builds a comprehensive platform that combines local governments at all levels and all sectors by means of mobile technology to improve the effect of the public service supply, and this has been demonstrated with fairly good achievements in the public interaction with city councilors, unified assessment, street view, iTex messaging service, building control and mobile cemetery.

2.2 Urban gridded management
The attention on gridded management by the Chinese scholars starts in the practice of urban management. The official operation of the information platform of urban grid management of Dongcheng District, Beijing, in October 2004 pioneered the application of grid technology in urban public services. It was rapidly well received by the public management for being instant, seamless and refined. Over 50 cities in China experimented with gridded management in the public service supply as of September 2014. The theoretical research related to gridded management has won a number of national research project grants, including 1,151 projects funded by the National Natural Science Foundation, totaling RMB543,670,000; 44 projects funded by the Social Science Fund; and a number of research projects supported at the provincial and ministerial level. According to the statistics obtained from the China National Knowledge Infrastructure (CNKI) database, as of September 12, 2014, there have been 55 achievements in science and technology in grid research and 27 achievements supported at the provincial and ministerial level; there are as many as 50,312 articles with the keyword grid in CNKI, and 395 journal articles with the keywords gridded management and public service.

As the practice is conducted before the theory is studied for gridded management in China, a summary and sorting of experience from the practice accounts for 71.78 per cent of the existing documents. Wang et al. (2006) argued that it has to be improved for gridded management in the process specification, command mechanism and evaluation mechanism. Song (2005) measured the efficiency and value of gridded management in the public service supply based on the completed urban gridded management and service system of Jianghan District. Chi et al. (2008) suggested that the types and characteristics of the problems that can be solved by gridded management have to be discussed in a profound manner, and the fundamental goal and the requisite condition of gridded management should be considered. Wuhan. Han (2011) summarized the application of gridded management in public services of “one grid, three members” in the community and street management of Nanshan District, Shenzhen, and promotes actual operation of gridded management in public services by the linkage of four mechanisms, including coordination, discovery, warning and diversion. Wei (2013) declared that grid management should not only be the pure application of new technology but also the urban community governance creation activated by the application of new technology and realized by the rebuilding of the operation flow. Yang et al. (2015) pointed out that developing the platform of the urban grid management service, integrating the resources of various kinds of management services and innovating the refinement of urban management and service are the goals of the smart city construction with Chinese characteristics and also the effective breakthroughs.

2.3 Grid principle
Studies on the grid principle in the existing documents only account for 28.22 per cent, mainly clarifying the source of the gridded management ideology, basic concept and application prospect. Zheng et al. (2005) defined the grid as a new technology built on the internet that integrates the entire internet into a supercomputer, so as to achieve full sharing of computing, storage, communication, software and information. Chi et al. (2008) deemed that the ideology of
Gridded management comes from the supply of water and electricity, and gridded management contains the grid and the user, which realizes a two-way interaction through technology agreement and management agreement. The users can enjoy the service anytime once they submit the demand, and the grid is responsible for providing services quickly and accurately. Zhu (2012) said that gridded management was a major reform and breakthrough in the government management process following the “Seamless Government Model”. It implants factors such as service, information technology and comprehensive management into grassroots social management work, and effectively increases refinement and comprehensive social management. Zhu and Bai (2010) proposed that the grid should be upgraded as an ideology for management and resource allocation, and the coordination system should be redesigned by the grid theory; with the concentration effect, inefficiencies of the traditional allocation of public service resources can be effectively solved, and the feasibility of gridded management application in crisis warnings and equalization of public services in urban and rural areas is also explored. Jiang and Ren (2013) declared that the urban grid management model is a set of urban management ideas, tools, organizations and flows that forms the base of digital technologies and takes grid management as its basic character. Li and Wei (2014) pointed out that grid management is a kind of urban management revolution and innovation. While Chen and Xiao (2015) expressed that in the recent development of community governance, the trend of “no grid, no management” has appeared in urban grid management.

In summary, there exist divergences concerning the features of the grid management mode. There are two typical viewpoints. One is called the view on controlling order. According to this viewpoint, the grid management mode from its institutional arrangement represents a series of city management activities in the three functions of society control, information transfer and community services, integrally taking advantage of hi-tech means but still aiming at society control. The other is called the view on diversified services. According to this viewpoint, the grid management mode has realized the transformation from the controlling to the services, i.e. the transformation from favoring the rigid administrative means to emphasizing the comprehensive management with economical, moral and technical measures.

Gridded management upgraded from a practical level has become the concept and ideology rising from an abstract technology. A consensus has been reached in both the academic circle and the management circle that it can be applied to optimize the public service supply, which builds a framework of basic research on gridded management in the field of public service. However, the study is still weak regarding how to optimize the supply of public resources by the gridding mechanism and how to enhance the efficiency of supply by the new model. In particular, there is no scholar conducting systematic research on what exact logical framework this new management service model is built on and how it is operated, which is the focus of this paper.

3. Inherent logic and operation mode of gridding mechanism of public service supply
3.1 Inherent logic of gridding mechanism of public service
The gridding mechanism of the public service supply breaks the concept of departments operating separately, connects each management level and balances the management power by means of unified distribution and collaborative sharing of public service resources. The goal of improving efficiency is achieved by adjusting the public service model and revitalizing the existing resources within the system, yet without expanding the investment. The gridded management mechanism has evolved from the original two-dimensional plane to a three-dimensional grid to match the supply and demand of public services. The inherent
logic of the public service gridding mechanism is to connect the line by points, establish vertical links; to connect planes by responsibility, establish horizontal links; and to cross the vertical and horizontal links to set up the dimensional grid.

3.1.1 Connects the line by points and establishes vertical links. First, it connects the line by points and establishes vertical links. The grid public service mechanism connects the dynamic service demand with the static sector supply for quick-response. This response is first a vertical response, which is replied to a demand by the public service supply sector and forms a linear connection between the demand and the public service supply sector; while the supply sector first responds to the demand, there is no initiative and effective connection with other supply sectors. For example, in case a traffic accident occurs as two vehicles collide on a major road, this information will be instantly passed simultaneously to the police department, the first aid department, the firefighting unit, the insurance company, the community and the workplaces of the parties involved, forming the vertical link between the public sectors and objects of demand. The public sectors change from being asked to supply services to serve initiatives, and the public can wait for the service to come instead of struggling for finding the service.

3.1.2 Connects planes by responsibility and establishes horizontal links. Second, it connects planes by responsibility and establishes horizontal links. There is no need for the public to appeal to each functional sector once the grid instantly communicates the public demand to various authorities, which will automatically complete relevant processes through initiative contact among the sectors. For example, once the two vehicles that collided on the road with major traffic are evacuated from the scene of the accident, the people involved may need to be hospitalized. The public authorities change from providing service to asking for service, and the public enjoys the service instead of requesting service.

3.1.3 Crosses the vertical and horizontal links to set up the dimensional grid. Finally, it crosses the vertical and horizontal links to set up the dimensional grid. The supply of public services by the gridding mechanism is a dynamic, continuous and relative process. It provides comprehensive, seamless and satisfactory services to the public through a dimensional grid under the policy schedule. The public services with a vertical link respond timely, but the service it provides is a single one; public services with a horizontal link save time and effort, but it is an idealized service with the real demand ignored; crossing the vertical and horizontal link can guarantee the services provided to be comprehensive. Thus, the three-dimensional grid of the public service mode was formed by covering the public services with a three-dimensional network and providing services by gridded management. Among them, the policy schedule is the essential joint for gridded management to go from assumption to reality and also the guarantee for operation of the three-dimensional grid. For example, when the accident occurs, the parties involved will first establish a vertical link with the traffic police, the first aid department, the firefighting unit and the community; they will be promptly evacuated from the scene and sent to a hospital, with family members being informed; the subsequent information, including verification of liabilities, accident compensation, hospitalization, leave from work and daily life care, is automatically transferred through a horizontal link among the authorities, which certainly will be conducted with the consent of the parties involved, and it ultimately forms the grid public service supply model with information as the link, duties as the driving force and service as the goal.

3.2 Operation mode of gridding mechanism of public service supply
A discussion of the operation of public service supply mechanisms should be carried out at two levels: administration and technological operation.
3.2.1 System construction. The first step is the designation and construction of the system. First, a Working Group is established by the government with the concept that public service authorities should be altered from being superior to being initiative to ask the demands and serve. Responsibilities of each level and service functions of the authorities will be clearly stated in the system so that each staff from the service sectors is clear of the specific work of gridded management of public services and functionality of the grid system. Second, the existing service resources and technology networks of the public sectors are integrated. It consists of two aspects, one is to reconstruct administration processes and responsibilities and set up supervision so as to achieve grid normalization of daily grassroots affairs, and the other is from the technology aspect, to develop grid spatial dimensions and data-sharing standards and construct a unified data platform and portal for public services, as shown in Figure 1. For example, the Urban Management Command Center has been established in Dongcheng District, Beijing. In all, 350 urban grid controllers are responsible for full-time monitoring of 1,593 grid units, and they provide timely reports of the demand for public services to the Command Center. The resources will be allocated by the Command Center with the supervision of the Control Center to achieve the refinement and dynamic management of public services (Figure 1).

3.2.2 Operation process and collaboration work. The second step is the operation process and collaboration work. Clear process and collaboration is the core of the gridding mechanism. In the process, different departments perform their duties under the coordination of the Command Center. The main functions of the City Department are to dispatch the supply and demand and report the overall situation of public services in the region; the Township Department is responsible for the transmission of information and the division of tasks; and the grassroots Grid Department is responsible for collecting specific signals of demands for public services and providing the services.

In the technological operation, the supply and demand resources of public services are broken down by multi-agreement negotiations, and contents transferred among resource nodes are introduced in entirety, ensuring that the requirements of the agreement are accurately expressed and supplied. Supply and demand meta-data of all users is collected by the grid platform, and the meta-data, after being classified and

---

Figure 1. Grid system of the public service supply
sorted, is distributed to different meta-data storages to be matched. Automatic matching is achieved by the data system in the grid middle layer, which minimizes staffing and improves requirements of both the supply and demand of public services. For example, the grid public service system of Zhoushan City consists of three levels: first, to set up five-class grid systems from the city to the grassroots level; second, to require the integration of public service resources by various management levels, with vertical and horizontal work combined; and third, to establish an integrated management and service system to coordinate the conflict and assess performance. In the technical process, the complex and cross-sector public services are integrated in the virtual system by means of geo-coding technology and mobile information technology, the procedures and the operation process of a closed business are optimized and re-engineering of the public service supply process is promoted.

3.2.3 Guarantee of operation and monitoring of efficiency. The last part is the guarantee of operation and monitoring of efficiency. The government provides policy support by formulating normative documents and material support by reserving adequate funding and infrastructure, and allocates public officials to monitor possible public services. The information database is established, and the components of the objects of public services are integrated by the use of the geographic information system and spatial information system. The Command Center is instantly alerted once the public has doubts on public services. For example, the regulations on sub-district committees of Changning District, Shanghai, have been revised during the gridding process of public services, where the relationship between vertical and horizontal organizations and related functions are stipulated; at the same time, 1,459 grids are monitored by 111 controllers by means of the grid information platform to ensure timely finding and immediate fixing of public issues. Monitoring of efficiency is the end of the gridding mechanism of the public service supply. The exclusive quality assurance system has been established by the Command Center to carry out whole-process monitoring of the efficiency of the public service grid supply and receive timely feedback of the public users on public service supply, so as to make adjustments (Figure 2).

![Figure 2. Efficiency monitor of the gridding mechanism in public services](image-url)
4. Efficiency analysis of gridding mechanism of public service supply

The grid mechanism of the public service supply in China is fairly mature. As of 2011, 33 pilot cities out of 51 were found acceptable, and the development process is as shown in Figure 3.

The efficiency of the grid mechanism of the public service supply can be investigated in two aspects: one is the convenience of the government supply of public services and the benefits of the supply, and the other is public contentment and satisfaction on public services.

The gridding mechanism of the public service supply realizes the change of the public service supply from ruling to serving, with a clear process for the public service supply, simple procedures and efficient implementation. For example, the 10,000 m unit grid is applied in Dongcheng District, Beijing, for integrated urban component management. With the use of a dual system of management and supervision, the accuracy rate of task implementation reaches 98 per cent, the disposal rate reaches 90.09 per cent and the clearance rate reaches 89.78 per cent. In the five years after the grid management is established in Dongcheng District, about 44 million Yuan of the city management fund may be saved each year, while the establishing fund reaches less than 10 million Yuan for implementing the new mode in the district. Altogether 220,000 cases of urban management have been registered and handled in Changning District, Shanghai from October 2004 to October 2011, with the average closing time to handle a problem of only 6.5 hours, six times more than the number of problems handled in the past; 19,617 cases of inharmonious factors have been reported by the grid in Taoyuan District, Shenzhen, out of which 19,497 have been resolved, at a rate of 98.92 per cent; 14,149 have been resolved by the community grid, accounting for 71.42 per cent, five times more than the number of problems treated by the original model. Compared with the traditional supply model of public services, the problem detection rate of the grid public service supply model is improved by 60 per cent, the average closing time is deducted by 22.4 times and the number of problems disposed per month is increased by 5.3 times.

In Wuhan City, 13,210 cases have been registered with a settlement rate of over 80 per cent and an average daily handling number of over 100 cases, as the grid management system is put into use only half yearly. In Jinyuan Community, Huizhou City, Guangdong Province, since December 2014, 26,915 pieces of messages have been acquired and recorded, 113 cases
have been accepted and 106 cases of public appeals have been settled, with a settlement rate of 94 per cent. In Changzhi City, Shanxi Province, the number and quality of event acceptance and handling have greatly increased after the system was operated in the second half year of 2013. Up to July 2015, the three levels of the municipal centers had accepted 195,687 cases and effectively handled 165,351 cases reported by the grid managing personnel. In these cases, 48,502 were accepted and classified as the safe construction events with 13,252 effectively handled, 14,728 as public appeals with 4,086 effectively handled, 1,259 as emergency response events with 1,259 effectively handled and 79,576 as the miscellaneous with 16,440 effectively handled. In Chaoyang City, Liaoning Province, in the three years after the grid management mode was operated, the 362 grids in all sub-district offices of the city have collected 39,000 pieces of various kinds of basic data messages, the platforms have recorded and handled over 790 cases of various service management events and the grid managing personnel have kept over 1,800 diary entries concerning popular opinions. Various service teams have handled over 1,200 cases of various events for the residents, solved 1,900 cases of problems of various kinds, discovered and eliminated over 1,100 cases of various potential hazards and conflicts and eased over 800 cases of disputes.

The gridding mechanism of the public service supply realizes in a certain extent to obtain public services as per demand; exempts the public from having to run from pillar to post, among the government sectors; and enables the public to enjoy the services, rather than request the services. According to the economic assessment report issued by the Unirule Institute of Economics, Beijing, gridded management of public services brings additional benefits of at least approximately RMB158 million Yuan per year for the residents in Dongcheng District, saves the costs of more than RMB54 million Yuan and provides 411 employment opportunities. Based on these data, as there are 660 cities of all scales in China with the existing urban area of 28,308 km², assuming that the grid supply of public services is promoted across the country, a total cost of RMB1.464 billion could be saved per year, bringing an increment of social welfare of approximately RMB57.5 billion and 460,000 new job opportunities.

In Luwan District, Shanghai City, the number of public complaints has dramatically dropped after grid management was implemented. The repeated complaint rate was zero in November 2006, and the complaints from urban construction hotlines also dropped by about 50 per cent. The number of appealing cases lessened 370,000 in Zhejiang Province in 2009, compared to that in 2008, and especially, it has dramatically dropped for complaints regarding the working style of party members and the work efficiency of various offices. So far, the grid management teams in various levels of the province have found out more than 1.81 million events after investigations, eased more than 1.38 million cases of various conflicts and disputes, solved 464,000 problems for the public and benefited over 11.9 million persons in total. In Xixiangtang District, Nanning City, Guangxi Province, after the grid management mode was implemented in 2014, over 110,000 suits of housing and about 250,000 migrants have been acquired and recorded, 1,795 cases of conflicts and disputes have been eased, 7,271 person-hours of job training have been provided, 190,000 copies of various kinds of publicity materials have been distributed and 30,766 person-hours of free health check-up for the fertile women of the immigrating population have been conducted. The public safety and satisfaction rose dramatically up to 87.92 points in 2015 from 69.5 points in 2013.

In practice, the operation of the current grid system of the public service supply is mostly explored step by step, hence still leaving many problems to be solved. For example, traditional management is still the mainstream; the conflict between the new and old systems
<table>
<thead>
<tr>
<th>New management mode</th>
<th>Less management cost</th>
<th>Higher management efficiency</th>
<th>Better management benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformation from extensive management to delicacy management</td>
<td>Less human cost</td>
<td>Higher daily management efficiency</td>
<td>Higher public satisfaction degree</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Promotion in satisfaction of demands</td>
</tr>
<tr>
<td>Transformation from static management to dynamic management</td>
<td>Less civil servants' work efficiency</td>
<td>Intensified order control supply</td>
<td>Better availability of governmental services</td>
</tr>
<tr>
<td>Transformation from passive management to active service</td>
<td>Specific work division of functional departments</td>
<td>Immediate service management</td>
<td>Consolidation in public subjectivity</td>
</tr>
<tr>
<td>Transformation from post-incident handling to early warning</td>
<td>Identified work task of the management</td>
<td>Less inter-department coordination</td>
<td>Higher public engagement</td>
</tr>
<tr>
<td>Organizational structure transformation</td>
<td>Automation in information collection and handling, less office appliances, less material requirements</td>
<td>More timely crisis early warning and higher degree of early warning</td>
<td>Better government reputation</td>
</tr>
<tr>
<td>Vertical management to bottom flat management to side linearization</td>
<td>Full use of existing resources and less financial inputs</td>
<td>Emergency handling immediate response</td>
<td>Change in civil servants' working style</td>
</tr>
<tr>
<td>Work flow innovation</td>
<td>Standardization</td>
<td>Better availability of government services</td>
<td></td>
</tr>
<tr>
<td>Standardization</td>
<td>Uniformization</td>
<td>Better service quality</td>
<td></td>
</tr>
<tr>
<td>Delicacy</td>
<td>Informationization</td>
<td>Satisfaction of demands</td>
<td></td>
</tr>
<tr>
<td>Operation mechanism perfection</td>
<td>Whole plan system of resources Public opinions assessment system Public opinions information collection system Evaluation and assessment system</td>
<td>Intensive management for less time of public services</td>
<td>Better availability of governmental services</td>
</tr>
<tr>
<td>Public opinions assessment system Public opinions information collection system Evaluation and assessment system</td>
<td></td>
<td>Better availability of government services</td>
<td></td>
</tr>
<tr>
<td>Better usage of existing resources and less financial inputs</td>
<td>Immunity handling immediate response</td>
<td>Better service quality</td>
<td></td>
</tr>
<tr>
<td>Emergency handling immediate response</td>
<td>Less social costs</td>
<td>Satisfaction of demands</td>
<td></td>
</tr>
<tr>
<td>Better availability of government services</td>
<td>Better availability of governmental services</td>
<td>Satisfaction of demands</td>
<td></td>
</tr>
<tr>
<td>Better availability of governmental services</td>
<td>Better availability of governmental services</td>
<td>Satisfaction of demands</td>
<td></td>
</tr>
<tr>
<td>Interaction between governmental management and residents</td>
<td>Encouraging public engagement in services</td>
<td>Better availability of governmental services</td>
<td></td>
</tr>
</tbody>
</table>
cannot be eliminated; the interest disputes among the sectors increase; the Command Center faces more stress; the staff varies in ability and quality levels; the system hardware does not match the grid requirements; and the technical defects, digital divide and map updates also objectively restrict accurate positioning of public services as well as the operation of the information stream. These operational problems will be solved with the development of technology, but the more in-depth problem is that most of the fields that practice the gridding mechanism of the public service supply see it only at the Technical level, rather than upgrading to the management level.

5. Conclusions
The following conclusions are summarized according to the above research:

- The grid management of the public service supply is rather aimed at innovation of the grassroots social management mode than limited to as a remedy of the traditional public services management mode. Based on such advantages as effectively overcoming various malpractices of the traditional public service managements, saving the administrative management costs, improving the management efficiency and promoting the management benefits, the grid management mode will provide a practical route for advancing the grassroots government function transformation and facilitating the social development (Table I).

- As a management mode in its immature stage, the grid management of public services still has lots of problems to be solved, which lie in that, first, the theoretical study for application in the public service supply is rather premature. The theoretical logic and operation principles have not yet been demonstrated completely in theory. The grid operation of the public service supply mainly relies on the experience with insufficient theoretical support. Second, instead of being a mere technical means, gridded management should be upgraded to a management thinking to build the grid service model with information as the link, duty as the driving force and service as the goal, so as to provide a solution for the efficiency of supply and demand of public services. Third, introduction of gridded management in the public service supply requires a reform in orientation. Gridding of the public service supply is public demand-oriented, initiated by the public from the lower level to the upper level, which is a re-engineering of the operation process and even a reform in the public service model. Fourth, the grid model in the public service supply needs to be demonstrated completely in theoretical logic and operation principles before it is promoted across the country. Meanwhile, full support of the government is required in terms of service concept, function distribution, technical parameters and infrastructure.

References


Further reading


BGR/UNESCO (2008), Groundwater Resources of the World, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover.


Zhou, M.D. (2005), Implementation of Data Transfer Platform Based on Grid Technology, Sichuan University.

Corresponding author
Muhammad Imran Hanif can be contacted at: mimranhanif@bzu.edu.pk

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com
Characteristics of closed car-sharing services for urban public housing residents

Wanhee Byun
Urban Planning and Architecture Division, Land and Housing Institute (LHI), Daejeon, Republic of Korea

Jung-Beom Lee
Daejeon Development Institute, Daejeon, Republic of Korea

Hoyoung Kee
Urban Planning and Architecture Division, Land and Housing Institute (LHI), Daejeon, Republic of Korea, and

Myungsik Do
Department of Urban Engineering, Hanbat National University, Daejeon, Republic of Korea

Abstract

Purpose – The purpose of this paper is to analyze the characteristics of closed car-sharing services and present the relevant factors to provide reasonable service locations. Car-sharing service locations have been arranged to allow customers to easily access locations. However, the particular car-sharing service in this study, enforced through an agreement between residents of the House of Commons, is operated as a closed service, limited to public housing residents. This closed car-sharing service in the House of Commons differs from typical services in that, after use, the users return the vehicle to the same parking location. In addition, determination of the general car-sharing locations is based on the profits of the service operator. The service can be stopped as there are a number of other alternatives for mobility. However, if the closed car-sharing service in the House of Commons is canceled, there is no other alternative for existing users. Therefore, the site selection for the initial introduction of the House of Commons in a closed car-sharing service is a very important issue.

Design/methodology/approach – This study uses nine months of data from 39 complexes for location analysis for public housing residents in urban areas. The LH Happy Carsharing is a closed private service, used by people residing within approximately 50 rental LH-apartment complexes. As closed car sharing is unfavorable in comparison to other car-sharing services, it is important to demonstrate that the service can succeed in securing a sufficient amount of users. To analyze the viability and usage of the service, the authors have considered ten potential variables.

Findings – On the basis of the regression analysis result, the adopted significant variables are the number of households, the percentage of residents in the 40’s age group and the number of household with registered vehicles.

Originality/value – In general, for car-sharing research, specific user groups are not generally identified. However, LH Happy Carsharing is specifically targeted to residents in rental apartments. The LH Happy Carsharing is a private service, used by people residing within approximately 50 rental LH Apartment complexes. Since closed car sharing is unfavorable in comparison to other carsharing services, it is important to demonstrate that the service can succeed in securing a sufficient amount of users. Therefore, this study aims to analyze the characteristics of private carsharing and present the relevant factors to provide reasonable service locations.

Keywords Big data, Carsharing, Location allocation of public service

Paper type Research paper
Introduction
Recently, the world has witnessed a global spread in the concept of a sharing economy (Shaheen and Martin, 2015; Le Vine et al., 2014). As this sharing economy is based on cooperative consumption, various services have been realized through the development of IT technology. The car-sharing service is one of the representative cooperation consumption examples in the field of transportation. As car sharing is a service available to people in a wide variety of situations, based on certain regulations, its operation methodology is similar to short-term car rental. However, there is a great difference between a car sharing and a general car rental (Byun et al., 2013). As a personal, individual form of public transport, it not only leads to a greater convenience for access of use, but also aims to improve congestion and is beneficial to the environment. Bao and Toivonen (2014) analyzed practical applications of it in the Chinese eco-cities.

Similar services have proved successful all over the world, such as Zipcar in the USA, AutoLib in Paris and Time24 in Japan. In Korea, since its introduction in 2011, the system has been continuously spread. Public organizations, such as Seoul car sharing, Incheon car sharing, Ucar of the KORAIL Corporation, and Happy Carsharing of the Land & Housing (LH) Corporation, are currently under operation. In the private sector, the Green Car and So Car are under service status (MLIT, 2014). In advanced countries, there have been a variety of studies carried out on the operation of car sharing and its effect. In addition, there are studies on the theory and its operation in Korea. Jorge and Correia (2013) have reviewed the estimated demand and operation of car sharing. Costain et al. (2012) have studied the trend of car-sharing users, targeting Toronto. Luca and Pace (2015) modeled users’ behavior in the inter-urban car-sharing program and investigated its effectiveness. Do and Noh (2013) have proposed a method for location selection, utilizing spatial analysis methods in Korea.

In general, for car-sharing research, specific user groups are not generally identified. However, LH Happy Carsharing is specifically targeted to residents in rental apartments. The LH Happy Carsharing is a private service, used by people residing within approximately 50 rental LH Apartment complexes. As private car sharing is unfavorable in comparison to other car-sharing services, it is important to demonstrate that the service can succeed in securing a sufficient amount of users. Therefore, this study aims to analyze the characteristics of private car sharing and present the relevant factors to provide reasonable service locations. This study could contribute to improving the policy, while giving priority to implementing the initiative and parking lot for car-sharing vehicle in residential area, especially in apartment which accounts for 40 per cent of housing in South Korea.

Main characteristics of LH Happy Carsharing

Status of registered vehicle numbers for LH rental apartment
The rental apartments procured by LH in 2013 consisted of 706 complexes and 544,926 individual households. The occupancy qualification differs depending on the income level. The range consists of the permanent rental, national rental and public rental apartments for low-income families or individuals. Table I shows the distribution status of LH rental apartments.

The average number of registered vehicles per household in Korea is 0.91, but the figures for permanent rental and national rental apartments of LH rental apartments are far behind the one in Korea. The public rental apartment is a bit closer to the average (Figure 1).

LH Happy Carsharing method
LH Happy Carsharing services can be obtained by making reservations online or by a smartphone application. The status of available shared cars within apartment location can
be checked immediately. Also, the usage times and the number of usages are recorded in real time. Furthermore, data on vehicles under operation can be collected through GPS.

**Characteristics of LH Happy Carsharing**

LH Happy Carsharing services initially started in October 2013, in the Seoul, Gyeonggi and Incheon regions of Korea. The service provides residents in LH rental houses with a private car-sharing service. The lowest fare, in comparison to other national and international car-sharing services, was applied to the service in consideration of the low-income target level (TCRP Report 108, 2005) (Figure 2).

LH Happy Carsharing provides their service for 2,900 won (US$ 2.6) per hour, which is far below the fare of 6,300 won (US$ 5.7) for the Seoul car-sharing service. To maintain this low fare, LH provides commission agencies with free parking lots and a management office within the apartment complexes, which support vehicle management. Figure 3 shows the fares per hour for national and international car-sharing services.

The LH Happy Carsharing is classified into a non-profit type in a management side, residence-oriented in a space, a vehicle-sharing method in a vehicle-owned body and a two-way method in a return policy. In general, the vehicles are secured in parking lots within the vicinity of the public transport locations. This means that potential users can be attracted from a wide area. On the other hand, as LH Happy Carsharing is targeting only residents

### Table I.

**Distribution status of LH rental apartment (2013)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Permanent rental</th>
<th>National rental</th>
<th>Public rental</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>129 complexes (142,566 households)</td>
<td>502 complexes (355,451 households)</td>
<td>75 complexes (46,909 households)</td>
<td>706 complexes (544,926 households)</td>
</tr>
<tr>
<td>Metropolis</td>
<td>53 (77,775)</td>
<td>94 (79,432)</td>
<td>27 (16,688)</td>
<td>174 (173,895)</td>
</tr>
<tr>
<td>Provincial city</td>
<td>76 (64,791)</td>
<td>408 (276,019)</td>
<td>48 (30,221)</td>
<td>532 (371,031)</td>
</tr>
<tr>
<td>Occupancy condition</td>
<td>Basic living security receivers, single parent families, patriots and veterans, North Korean refugees</td>
<td>Average monthly household income less than 70% of urban workers party</td>
<td>Real estate less than US$ 196,000</td>
<td>Vehicles less than US$ 25,400</td>
</tr>
<tr>
<td></td>
<td>Average monthly household income less than 50% of urban workers party</td>
<td>Real estate less than US$ 115,000</td>
<td>Vehicles less than US$ 22,300</td>
<td>Realestateless thanUS$ 196,000</td>
</tr>
</tbody>
</table>

*Figure 1.*

Registered vehicle number per household

*Figure 2.*

Registered vehicle number per household for national and international car-sharing services.
from adjacent or targeted rental apartments, the number of users is restricted, and therefore the number of vehicles for car sharing is restricted, as well.

The LH rental apartments can be divided into two proximities (types 1 and 2, shown in Figure 4). LH Happy Carsharing is based in the region where two or more rental apartment complexes are adjacent. These regions are favorable for securing users (or membership) and are accordingly favorable to the service establishment.

Analysis of LH Happy Carsharing use

Utilization characteristics of LH Happy Carsharing

Useability and fundamental analysis. This study investigates the usability of the LH Happy Carsharing, which targets people living in rental apartments. The TCRP Report 108 (2005) states that the major of car-sharing users in America are aged between 30 and 40 and live in high-density urban areas. There are generally two or less users per household, and they are generally highly educated and have a high-income level. According to Cervero et al. (2007), more than 60 per cent of respondents use car-sharing vehicles distributed within a 10-minute distance. In America, the main uses of shared cars are shopping, leisure activities and private business.

However, based on data obtained from Green car of Korea, 87 per cent of user members are aged between 20 and 30. Members living near subway stations are more likely to use car-sharing vehicles. Thus, this study investigated the difference between the use characteristics of general car sharing and those of the specific users of LH Happy Carsharing.
For this study, we investigated the characteristics of each apartment complex (households, appraised value of land, public transport supply, vehicle registration number) and the characteristics of the users (usage time, frequency, user age distance, the purpose of use).

Table II includes basic data on the use of the LH Happy Carsharing. The data show the total usage time, the average usage time per booking, frequency of the use, the number of the households, the number of the memberships, the appraised value of land, the public transport supply and the number of registered vehicles per household. The total usage time, within the nine-month analysis period, was 96,079 minutes on average and the service was used for an average of 344 minutes, a day. The average usage time per booking was 290.3 minutes. In addition, the number of individual sharing operations was 331, which is an average of 1.19 times per day. The average number of participating households was 1,343 and the average membership number per complex was 62. The average appraised value of land was 2.19 million won (US$ 1,991) per square meter and the public transport provided buses and subways at 207 units, per hour. As the registered vehicle number was 937, it is far behind the 0.71 per household and the national average of 0.91.

**Characteristic of usage time.** This study uses nine months of data to study the characteristics of the LH Happy Carsharing usage times. Figure 5 shows that usage increased over a period of study.

The most popular usage times for the LH Happy Carsharing are between 08:00 a.m. to 04:00 p.m. in the daytime rather than at night, as shown in Figure 6. There is no significant difference between weekdays and weekends. Table III shows that, throughout the week, Thursday is the day with the highest usage, although the differences between weekdays are minimal. Sunday, is the day with the lowest usage.
<table>
<thead>
<tr>
<th>Name of complex</th>
<th>Total usage time (min.)</th>
<th>No. of uses</th>
<th>No. of households</th>
<th>No. of memberships</th>
<th>Public land price (1,000 won/m²)</th>
<th>Public transport supply (vehicle/hr)</th>
<th>No. of registered vehicles per household</th>
<th>No. of residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saekang 5</td>
<td>246,017</td>
<td>886</td>
<td>2342</td>
<td>129</td>
<td>1,786</td>
<td>297</td>
<td>1.07</td>
<td>5,910</td>
</tr>
<tr>
<td>BeomMaeul 2</td>
<td>203,182</td>
<td>650</td>
<td>1,278</td>
<td>72</td>
<td>2,131</td>
<td>123</td>
<td>0.85</td>
<td>3,215</td>
</tr>
<tr>
<td>Gwanggyo 32</td>
<td>197,089</td>
<td>1102</td>
<td>2,289</td>
<td>169</td>
<td>2,534</td>
<td>104</td>
<td>0.40</td>
<td>4,737</td>
</tr>
<tr>
<td>Nonhyeonsky 3</td>
<td>196,143</td>
<td>230</td>
<td>2,148</td>
<td>41</td>
<td>2,131</td>
<td>194</td>
<td>0.87</td>
<td>5,214</td>
</tr>
<tr>
<td>Suseo</td>
<td>169,586</td>
<td>517</td>
<td>2,565</td>
<td>83</td>
<td>7,045</td>
<td>105</td>
<td>0.59</td>
<td>5,704</td>
</tr>
<tr>
<td>Some 3</td>
<td>159,771</td>
<td>677</td>
<td>2,026</td>
<td>91</td>
<td>1,729</td>
<td>104</td>
<td>0.63</td>
<td>4,003</td>
</tr>
<tr>
<td>Nonhyeon 5</td>
<td>136,168</td>
<td>355</td>
<td>1,522</td>
<td>55</td>
<td>2,131</td>
<td>203</td>
<td>0.82</td>
<td>2,923</td>
</tr>
<tr>
<td>BotdeulPangyo 3</td>
<td>126,184</td>
<td>364</td>
<td>870</td>
<td>64</td>
<td>4,442</td>
<td>198</td>
<td>1.27</td>
<td>2,570</td>
</tr>
<tr>
<td>Jinjeop 17</td>
<td>112,791</td>
<td>403</td>
<td>1,479</td>
<td>105</td>
<td>922</td>
<td>195</td>
<td>0.62</td>
<td>3,844</td>
</tr>
<tr>
<td>BotdeulPangyo 6</td>
<td>108,183</td>
<td>411</td>
<td>1,297</td>
<td>70</td>
<td>4,442</td>
<td>141</td>
<td>0.72</td>
<td>4,320</td>
</tr>
<tr>
<td>Deongchon 1</td>
<td>100,240</td>
<td>202</td>
<td>1,670</td>
<td>62</td>
<td>3,459</td>
<td>66</td>
<td>0.28</td>
<td>3,556</td>
</tr>
<tr>
<td>Hayan 6</td>
<td>104,700</td>
<td>241</td>
<td>1,849</td>
<td>47</td>
<td>3,050</td>
<td>642</td>
<td>0.92</td>
<td>3,388</td>
</tr>
<tr>
<td>Samsan 4</td>
<td>100,084</td>
<td>465</td>
<td>1,696</td>
<td>91</td>
<td>1,740</td>
<td>310</td>
<td>0.61</td>
<td>4,710</td>
</tr>
<tr>
<td>Neunggok 9</td>
<td>95,866</td>
<td>307</td>
<td>591</td>
<td>63</td>
<td>1,180</td>
<td>230</td>
<td>0.74</td>
<td>1,337</td>
</tr>
<tr>
<td>Nonhyun 14</td>
<td>91,724</td>
<td>342</td>
<td>1,800</td>
<td>76</td>
<td>2,008</td>
<td>207</td>
<td>0.76</td>
<td>3,720</td>
</tr>
<tr>
<td>Deongchon 9</td>
<td>90,651</td>
<td>147</td>
<td>1,445</td>
<td>43</td>
<td>3,459</td>
<td>141</td>
<td>0.36</td>
<td>3,461</td>
</tr>
<tr>
<td>Seommaeul 8</td>
<td>86,676</td>
<td>239</td>
<td>762</td>
<td>35</td>
<td>2,891</td>
<td>129</td>
<td>0.57</td>
<td>2,111</td>
</tr>
<tr>
<td>Goeup 8</td>
<td>85,541</td>
<td>360</td>
<td>1,124</td>
<td>64</td>
<td>948</td>
<td>124</td>
<td>0.40</td>
<td>2,797</td>
</tr>
<tr>
<td>Beombak 1</td>
<td>84,400</td>
<td>367</td>
<td>1,473</td>
<td>71</td>
<td>1,960</td>
<td>217</td>
<td>0.38</td>
<td>3,501</td>
</tr>
<tr>
<td>Goeup 7</td>
<td>83,630</td>
<td>294</td>
<td>773</td>
<td>68</td>
<td>948</td>
<td>120</td>
<td>0.52</td>
<td>1,675</td>
</tr>
<tr>
<td>Taean 12</td>
<td>80,768</td>
<td>504</td>
<td>1,178</td>
<td>43</td>
<td>1,639</td>
<td>177</td>
<td>0.63</td>
<td>2,648</td>
</tr>
<tr>
<td>Donghwa 3</td>
<td>78,438</td>
<td>228</td>
<td>842</td>
<td>44</td>
<td>1,131</td>
<td>212</td>
<td>0.83</td>
<td>2,084</td>
</tr>
<tr>
<td>SamsongSinwon 2</td>
<td>78,231</td>
<td>278</td>
<td>1,495</td>
<td>101</td>
<td>2,019</td>
<td>145</td>
<td>0.73</td>
<td>3,489</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Name of complex</th>
<th>Total usage time (min.)</th>
<th>No. of uses</th>
<th>No. of households</th>
<th>No. of memberships</th>
<th>Public land price (1,000 won/m²)</th>
<th>Public transport supply (vehicle/hr)</th>
<th>No. of registered vehicles per household</th>
<th>No. of residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homaesil 5</td>
<td>77,065</td>
<td>362</td>
<td>1,318</td>
<td>88</td>
<td>1,391</td>
<td>278</td>
<td>1.22</td>
<td>4,018</td>
</tr>
<tr>
<td>Jinjeop 16</td>
<td>76,151</td>
<td>261</td>
<td>1,129</td>
<td>36</td>
<td>903</td>
<td>244</td>
<td>0.89</td>
<td>3,283</td>
</tr>
<tr>
<td>Bakhyun 9</td>
<td>74,981</td>
<td>194</td>
<td>981</td>
<td>52</td>
<td>1,999</td>
<td>33</td>
<td>0.74</td>
<td>2,589</td>
</tr>
<tr>
<td>Samsong 16</td>
<td>71,222</td>
<td>233</td>
<td>1,201</td>
<td>36</td>
<td>2,200</td>
<td>101</td>
<td>0.79</td>
<td>4,841</td>
</tr>
<tr>
<td>Samsan 1</td>
<td>70,140</td>
<td>185</td>
<td>1,054</td>
<td>30</td>
<td>1,549</td>
<td>256</td>
<td>0.20</td>
<td>3,070</td>
</tr>
<tr>
<td>Seommaeul 9</td>
<td>67,508</td>
<td>191</td>
<td>1,005</td>
<td>59</td>
<td>3,033</td>
<td>70</td>
<td>0.92</td>
<td>2,795</td>
</tr>
<tr>
<td>Soha 6</td>
<td>66,372</td>
<td>287</td>
<td>1,174</td>
<td>41</td>
<td>1,983</td>
<td>114</td>
<td>0.69</td>
<td>3,139</td>
</tr>
<tr>
<td>Baekhyun 4</td>
<td>65,668</td>
<td>272</td>
<td>1,974</td>
<td>78</td>
<td>3,636</td>
<td>431</td>
<td>0.88</td>
<td>5,741</td>
</tr>
<tr>
<td>Gwanggyo 41</td>
<td>64,811</td>
<td>204</td>
<td>1,117</td>
<td>41</td>
<td>2,605</td>
<td>238</td>
<td>0.52</td>
<td>2,309</td>
</tr>
<tr>
<td>Donghwa 2</td>
<td>62,720</td>
<td>223</td>
<td>915</td>
<td>49</td>
<td>1,131</td>
<td>269</td>
<td>0.95</td>
<td>2,154</td>
</tr>
<tr>
<td>Soha 4</td>
<td>54,897</td>
<td>287</td>
<td>898</td>
<td>50</td>
<td>1,981</td>
<td>351</td>
<td>0.85</td>
<td>2,421</td>
</tr>
<tr>
<td>Samsan 3 Humansia 1</td>
<td>54,218</td>
<td>155</td>
<td>870</td>
<td>44</td>
<td>1,450</td>
<td>432</td>
<td>0.65</td>
<td>2,277</td>
</tr>
<tr>
<td>Garam 6</td>
<td>45,253</td>
<td>191</td>
<td>1,220</td>
<td>44</td>
<td>1,400</td>
<td>61</td>
<td>0.68</td>
<td>2,888</td>
</tr>
<tr>
<td>Goeup 5</td>
<td>33,227</td>
<td>140</td>
<td>531</td>
<td>22</td>
<td>901</td>
<td>253</td>
<td>0.90</td>
<td>1,506</td>
</tr>
<tr>
<td>Cheonsangsong 1</td>
<td>30,665</td>
<td>101</td>
<td>1,185</td>
<td>38</td>
<td>1,465</td>
<td>438</td>
<td>0.87</td>
<td>2,611</td>
</tr>
<tr>
<td>Samsong 14</td>
<td>19,472</td>
<td>83</td>
<td>930</td>
<td>45</td>
<td>2,057</td>
<td>79</td>
<td>0.42</td>
<td>2,007</td>
</tr>
<tr>
<td>Average</td>
<td>96,079</td>
<td>331</td>
<td>1,343</td>
<td>62</td>
<td>2,190</td>
<td>207</td>
<td>0.71</td>
<td>3,301</td>
</tr>
</tbody>
</table>
Figure 7 shows the total using time per each complex. The maximum usage time was in Dongtan Saekang Complex No. 5, which was 246,017 minutes. The minimum time was in Samsong Complex No. 14, which was 10,472 minutes.

Considering the residents in LH rental apartments are on a low-income level, the service usage rate is high for all age groups (41.42 per cent for 30’s, 34.64 per cent for 40’s and 17.66 per cent for 50’s). The using rate of the age groups from 40’s to 50’s is relatively high. This is thought to be a result of economic instability, dictating that few people are able to afford to purchase a car. The usage figures for genders show that 62.32 per cent of users are male and that 37.68 per cent are female.

The highest usage groups are aged in their 30’s and 40’s, residing downtown with a high-development density (TCRP Report 108, 2005). In research targeting the Green Carsharing membership, the 20’s and 30’s age groups accounted for 87 per cent and, in terms
Figure 7.
Total using time per each apartment complex (min.)

Figure 8.
Using time in all ages

Figure 9.
Using time of sex distinction
of gender, males accounted for 90 per cent. This differs from the result of the LH case and shows that the characteristic used by LH Happy Carsharing, targeting low-income levels, differs from general commercial car-sharing services (Figures 8 and 9).

Analysis of average movement distance and number of transit points
Various analyses have been performed using data on the transit points of LH Happy Carsharing. As shown in Table IV, LH Happy car service is mostly used for short-distance travels. Short-distance journeys of less than 10 km accounted for 73 per cent of the overall travel and 90 per cent were less than 30 km.

Figure 10 shows the transit points of LH Happy Carsharing from Goyang Samsong Complex No. 14. This figure shows a map with the starting point and transit points. The map

<table>
<thead>
<tr>
<th>Travel distance (km)</th>
<th>No.</th>
<th>Ratio (%)</th>
<th>Accumulated no.</th>
<th>Cumulative rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>38,208</td>
<td>73.4</td>
<td>38,208</td>
<td>73.4</td>
</tr>
<tr>
<td>10-20</td>
<td>6,642</td>
<td>12.8</td>
<td>44,850</td>
<td>86.2</td>
</tr>
<tr>
<td>20-30</td>
<td>2,558</td>
<td>4.9</td>
<td>47,408</td>
<td>91.1</td>
</tr>
<tr>
<td>30-40</td>
<td>1,652</td>
<td>3.2</td>
<td>49,060</td>
<td>94.3</td>
</tr>
<tr>
<td>40-50</td>
<td>929</td>
<td>1.8</td>
<td>49,989</td>
<td>96.1</td>
</tr>
<tr>
<td>50-60</td>
<td>576</td>
<td>1.1</td>
<td>50,565</td>
<td>97.2</td>
</tr>
<tr>
<td>60-70</td>
<td>340</td>
<td>0.7</td>
<td>50,905</td>
<td>97.8</td>
</tr>
<tr>
<td>380-390</td>
<td>1</td>
<td>0.0</td>
<td>52,041</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>52,041</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table IV. The number of Car-sharing use in each travel distance

Figure 10. Movement radius and main transit points of Goyang Samsong complex no. 14
includes short-distance points as well as remote distances, such as Gyeongsang-do, Jeolla-do and Gangwon-do.

As a result of the analysis on transit points and movement radius, LH Happy Carsharing users passed an average of four transit points per usage. The average distance traveled from the starting point was 23.2 km (radius), as shown in Figure 11. This indicates that users tend to use the service effectively with preliminary planning and tend to make short-distance journeys, as opposed to long distance. Also, the data show that there are many transit points, which means that the amount of public transport supply cannot be selected as a variable to estimate the user rate of car sharing. The fact that there are so many transit points per journey means that public transport would be an inconvenient method of transportation.

Analysis of main destinations
Figure 12 shows a convergence of the main transit points from 25 sharing locations of LH Happy Carsharing services. A total of 16,063 individual usages were operated from those 25 locations, and this accounts for 40.3 per cent of total travel. Because of the analysis of the different types of transit point’s locations, the following estimates were found: 9.5 per cent were residential, 19.8 per cent were commercial business districts and 11.0 per cent were leisure facilities such as amusement parks and country clubs. Unlike the general car-sharing services, this data show that the purpose of car sharing is mainly for work and shopping.
From the point of view that the majority of users are aged between 30 and 50, the result is reasonable (Table V).

**Regression analysis**

*General of regression analysis*

Regression analysis was performed to find out usage rate factors for the LH Happy Carsharing. For the analysis, 39 out of 46 complexes within the capital region were selected. To select meaningful variables among potential independent variables, the Stepwise method has been applied with a 5 per cent significance level. The dependent variable was the total usage time (min.) and an explanatory variable was analyzed using the number of complexes, the number of members, the appraised value of land, public transport supply (the amount within a 500 m radius over 1 hour) and the registered number of vehicles per household. Also, five age groups were used for the number of residents: 30’s to 40’s, 30’s to 50’s, 30’s, 40’s and 50’s.

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of transit point</th>
<th>Number of travels</th>
<th>Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential district</td>
<td>2, 3, 7, 9, 16, 23</td>
<td>3,796</td>
<td>9.5</td>
</tr>
<tr>
<td>Commercial business district</td>
<td>1, 5, 6, 8, 10, 11, 12, 13, 14, 17, 19, 25</td>
<td>7,885</td>
<td>19.8</td>
</tr>
<tr>
<td>Others (part, green zone, etc.)</td>
<td>4, 15, 18, 20, 21, 22, 24</td>
<td>4,382</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Figure 12. Main transit points of LH Happy Carsharing

Table V. Land use and travel rate of main transit points
To avoid any distorted analysis results for the selection, data from complexes showing a low rate of the service use have been excluded. Also excluded were complexes where usage rate (monopolization rate) by the minority (top 2 of the usage rate) accounted for 50 per cent. The remaining 39 complexes were analyzed with data collected from 1st April, 2014 to 31st December, 2014 and the technical statistic is shown in Table VI.

**Regression analysis for explaining usage rate**

For regression analysis of car-sharing usage rates, the following variables were selected from the explanatory variables stated in Table VII. These are in accordance with the Stepwise regression method. They are the number of people per household, the number of residents in their 40’s and the number of registered vehicles per household. For the result of the regression analysis, the value of $R^2$ of the model was 0.566. Variance analysis results indicated a significant result in adequacy levels. As a result of the significance test on the regression coefficient, the statistic also showed that $p = 0.000$ which means that it is statistically viable.

In addition, according to the regression standardized residual plot, shown in Figure 13, the residuals show a regular distribution type. The homogeneity of the variance of residuals is also considered to be at a good level by the standardized residual plotting on the estimate value of the dependent variable.

The regression model can be expressed as shown in equation (1):

$$\hat{y} = -105,904.060 + 82.43H + 336,275.578F + 48,504.068C$$

Where:
- $\hat{y}$ = utilization demand of carsharing (predicted value);
- $H$ = No. of household;
- $F$ = No. of residents in their 40’s; and
- $C$ = Number of registered vehicles per household.

Figure 14 shows the plotted result with the observation values and estimated values of the regression model.

**Conclusion**

In this study, the usage characteristic, average travel radius, number of transit points and regression have been analyzed for service interpretation by LH Happy Carsharing private

---

**Table VI.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total using time (min.)</td>
<td>96078.795</td>
<td>50521.9764</td>
<td>39</td>
</tr>
<tr>
<td>Number of household</td>
<td>1342.718</td>
<td>494.4278</td>
<td>39</td>
</tr>
<tr>
<td>appraised value of land (won)</td>
<td>2190487.179</td>
<td>1217434.0445</td>
<td>39</td>
</tr>
<tr>
<td>Public Transport Supply (unit)</td>
<td>20667</td>
<td>126196</td>
<td>39</td>
</tr>
<tr>
<td>Registered Vehicle Number (unit)</td>
<td>936.744</td>
<td>467.6807</td>
<td>39</td>
</tr>
<tr>
<td>Vehicle Registered Number of Household</td>
<td>0.7077</td>
<td>0.239032</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents</td>
<td>3301.436</td>
<td>1177.1682</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents in their 30s</td>
<td>0.1664</td>
<td>0.05102</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents in their 40s</td>
<td>0.1600</td>
<td>0.04235</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents in their 50s</td>
<td>0.1477</td>
<td>0.06146</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents in their 30s-40s</td>
<td>0.3118</td>
<td>0.06692</td>
<td>39</td>
</tr>
<tr>
<td>Number of residents in their 30s-50s</td>
<td>0.4796</td>
<td>0.04542</td>
<td>39</td>
</tr>
</tbody>
</table>

[JSTPM 8,1](#)
<table>
<thead>
<tr>
<th>Variables</th>
<th>Non-standard coefficient</th>
<th>Unstandardized coefficient</th>
<th>t</th>
<th>Significance probability</th>
<th>Correlation coefficient</th>
<th>Multi-collinearity statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-105904.0</td>
<td>395318</td>
<td>-2.679</td>
<td>0.011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of household</td>
<td>82.4</td>
<td>123</td>
<td>6.679</td>
<td>0.000</td>
<td>0.670</td>
<td>0.749</td>
</tr>
<tr>
<td>Number of residents in their 40's</td>
<td>336275.5</td>
<td>142459.8</td>
<td>2.360</td>
<td>0.024</td>
<td>-0.002</td>
<td>0.371</td>
</tr>
<tr>
<td>Vehicle-registered no. of household</td>
<td>48504.0</td>
<td>23820.7</td>
<td>2.036</td>
<td>0.049</td>
<td>0.115</td>
<td>0.325</td>
</tr>
</tbody>
</table>

**Note:** Dependent Variable: total using time
company. The study shows that the LH Happy Carsharing service was predominantly used by members in the age groups of 40’s and 50’s, accounting for 52.3 per cent of the overall rate. The average travel radius suggests that users are preliminarily planning vehicle use, as the average distance travel is short (23.2 km) and there is an average of 3.86 transit points, per use.

Regression analysis shows that the main significant factors for usage are the number of residents per household, the percentage of residents in the 40’s age group and the vehicle-registered number of households. These have been selected as the significance factors. The reason why the number of registered vehicles cannot be selected as a significant factor is because of the monopolization by the minority in the number of memberships. The reason that the public transport supply cannot be selected is due to the number of individual destinations per usage for users of Happy Carsharing services. The number of destinations makes the use of public transport inconvenient.

For the most influential factor on usage rates for private car sharing targeting the apartment complexes, shows that it is reasonable that the number of the households indicating potential users has been selected as the most significant variable. Therefore, the number of the households can be utilized as a major factor, capable of the estimate of usage rate in selecting the location to
additionally introduce LH Happy Carsharing services in the future. However, considering the fact that the usage rate within the 30's to 50's age groups is high, the travel radius is wide and the major transit points generally converge in commercial business districts, and also considering the fact that the apartment complex is not far from the downtown, it is considered that the location selection is reasonable. The results of this study will be utilized to enhance the car-sharing system such as prioritizing dissemination of the car-sharing system for rental apartments and establishing criteria for car-sharing-only parking spaces. Future study needs to focus on the relationship between LH Happy Carsharing service and CO2 emission reduction with sufficient car-sharing data.

References

Further reading

Corresponding author
Myungsik Do can be contacted at: msdo@hanbat.ac.kr

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com
Presenting a model for evaluating Internet advertisements for modification of energy consumption

Javad Khazaei Pool  
Department of Management, University of Isfahan, Isfahan, Iran

Reza Salehzadeh  
Department of Management, Shahid Ashrafi Esfahani University, Isfahan, Iran, and

Rashid Khalilakbar  
Faculty of Management, University of Tehran, Tehran, Iran

Abstract

Purpose – Limitations of producing energy and the increasing demands in the electricity market in Iran have not only drawn the attention of authorities in the energy industry toward optimization of energy consumption, but also created marketing approaches toward these objectives. In this respect, it is important and even necessary to modify energy consumption behaviors. The purpose of this study is to examine the impact of the criteria of an effective Internet advertisement for modification of energy consumption.

Design/methodology/approach – To provide a detailed understanding of customers’ perceptions of energy consumption advertising, a survey study was conducted. The research model is first validated and the formulated hypotheses are tested using the structural equation model (SEM).

Findings – The results showed that the audience’s attention, interest and desire for a piece of advertisement can predict their consumption behavior.

Originality/value – This study is one of the pioneer studies that highlights the importance of advertising toward modification of energy consumption. It seems that, the identification of the causal relations among attention, interest, desire and action, has not yet been clearly validated in the previous literature. This research contributes to the literature by developing and testing a comprehensive research model using SEM. So, the current paper offers vital guidelines to social marketers who are planning to modify energy consumption.

Keywords Structural equation modeling, Consumption behavior, Advertisement effectiveness, Energy consumption pattern

1. Introduction

Energy is indispensable and has a critical role in achieving high-economic growth and development in different countries (Al-Mulali and Sab, 2013). It relates to higher living standards and increases the productivity of different factors of production (Sahir and Qureshi, 2007; Zaman et al., 2011; Ahmed et al., 2013). According to the literature, one of the most significant preventive factors to develop strategies for modification of energy consumption is people’s lack of knowledge of modification methods. Modifying consumption patterns requires changing the lifestyle, providing vast practical information and informing people about modification methods (Harries et al., 2013). Professional advertisement practices play an important role in achieving these goals. Building a culture of modification
of energy consumption has also been under discussion in recent years; however, little
research has been done in this regard despite the authorities’ emphasis (Khazaei Pool et al.,
2014). Therefore, to increase the market value of Iran’s energy industry – which will benefit
from an increased export potential in the light of modified consumption – it is essential that
policymakers develop effective advertising policies in this growing industry of the country.
On the other hand, the huge amount of ads presented by different organizations has reduced
the overall advertisement effectiveness.

In the area of energy consumption, people selectively notice specific ads. Accordingly,
energy industry authorities need to spend much effort and money in attracting the intended
audience (Dehdashti and Lahiji, 2009). It is, therefore, important to understand how
advertising in the field of energy consumption can effectively attract audience’s attention
and increase their preoccupation with adapting their lifestyle with optimized energy
consumption in industrial, organizational and domestic environments. In this regard, one of
the most serious challenges is measuring the effectiveness of designed advertisements for
modification of consumption.

Increased competition in advertising has motivated researchers to analyze the
effectiveness of different advertisement methods. The majority of these studies have tried to
determine the commercial advertisement effectiveness of different companies (Wang et al.,
2013), and it seems that there is a gap in measuring the effectiveness of advertisement in the
area of modification of consumption. The present study tries to fill this gap by evaluating
advertisements concerning consumption patterns in the energy industry. Structurally, the
paper is organized as follows. Subsequent to this introduction, in the first section, prior
research regarding advertising effectiveness is reviewed. In addition, the AIDA (attention,
interest, desire and action) model is described and the research hypotheses are developed. In
the second section, the research methodology is discussed. In the third section, the main
findings are presented, and in the final section, the empirical results are discussed.

2. Literature review and hypothesis development
Increased competition in advertising has motivated researchers to analyze the effectiveness
of different advertisement methods. As mentioned earlier, most of these studies have tried to
determine the effectiveness of commercial ads (Wang et al., 2013). Some of these studies are
mentioned in the following paragraphs:

In an empirical research, Hoseini Amiri and Gholami–Fard (2014) tried to investigate the
effectiveness of Islamic commercial advertising messages on purchasing tourism products.
The results of the structural equation model used in this study showed that the effectiveness
of such ads was more than the ordinary ones. Ranjbarian et al. (2013) conducted a study to
investigate the relationship between the effectiveness of advertising and brand equity. For
this purpose, they focused on Samsung ads and found that the ads were very effective. This
indicated a positive relationship between effective advertisement and brand equity.

McKay-Nesbitt et al. (2011) studied how personal characteristics such as age, together
with the need for cognition, and the affective intensity, cooperatively affect advertising
effectiveness. The researchers used a mixed design method in their study. The results
showed that younger individuals remember emotional messages (especially, negative ones)
better than rational ones, while older people preferred positive rational ads. The results also
showed that age affects response to ads against the affective intensity, not against the need
for cognition. Finally, both age and the affective intensity affect the attitude toward an ad.

Aghazadeh and Bakhshizadeh (2010) studied the effectiveness of electronic
advertisement such as SMS, Web and email ads in the clothing industry. Their conceptual
model consisted of three phases, namely, cognitive, emotional and behavioral; and six steps,
namely, awareness, knowledge, desire, preference, being convinced and purchasing. The findings showed that none of the above-mentioned electronic ads had the required effectiveness in the clothing industry and would not go further than the awareness step. According to the results of the Friedman test, a ranking of electronic ads regarding awareness is as follows: ads via email have the highest impact followed by SMS ads, while Web ads have the lowest rank.

Abassi and Mohamadian (2007) showed that visiting web sites helps consumers to remember a brand name advertised on the Internet; it also creates a positive attitude toward the advertised brand. Those consumers who had a positive attitude toward visited web sites put more value on Internet ads than others. Finally, the results showed that consumers had more interest in television ads than Internet ones.

Patsioura et al. (2009) proposed a new advertising effectiveness model for corporate advertising web sites. The results revealed important aspects of web site viewers’ behaviors regarding their activities, preferences and desires. The results also indicated that the content of ads and qualitative factors significantly affect attitude toward ads; communication and feedback are important factors in the effectiveness of advertising web sites; and finally, online entertainment and communications on a web site lead to positive attitudes toward ads.

2.1 The AIDA model
The AIDA model (Gabriel et al., 2006; Nyahunzvi, 2013), as one the traditional response hierarchy models (Mihart, 2012; Gorton et al., 2013), is a well-known marketing tool and has widely been applied in different marketing activities such as sponsorship, advertising, promotions and business through web sites (Heath and Feldwick, 2007; Hassan et al., 2015). This model is very suitable for evaluating the effect of advertising through controlling every step of the individuals’ psychological transformation (Kojima et al., 2010).

According to Belch and Belch (2012), there are three attitudinal components or stages, which are summarized in the three-part attitude model: cognitive stage (an individual’s beliefs regarding an object), affective stage (an individual’s positive or negative feelings toward the object) and the behavioral stage (an individual’s willingness to react to the object). The AIDA process is based on attitude models (Kothari, 2004). It suggests that positive attitudes are related to consumers’ behavioral intention (Baca et al., 2005). The AIDA model has also three different levels (Gelb et al., 1985; Hofacker and Murphy, 1998; Rowley, 1998). Initially, in the communication process, consumers should be aware of the existence of a service (Zulkifly and Firdaus, 2014). So, in the first level (cognitive stage), consumers’ attention should be drawn. The first step is very important, as attention should be raised before consumers take further action (Maddox and Gong, 2005; Muller et al., 2011; Abu Bakar et al., 2015). At the second level (affective stage), consumers have an interest in the offered service and learn more about that service and consequently their desire to buy the service increases. At the final level (behavioral stage), the consumers use the provided service as a valued resource and the action takes place (Hassan et al., 2015).

Attitude is vital for explaining people’s behaviors (Stevenson et al., 2000; Luna et al., 2002; Richard and Chandra, 2005; Sicilia et al., 2006; Izquierdo-Yusta et al., 2013). According to Unal et al. (2011) attitude through intention affects behavior. Consumers’ favorable or unfavorable response to a certain advertisement influences their behavior toward advertising (MacKenzie and Lutz, 1989). Those who have more positive attitude toward advertising are more likely to be influenced by advertising (Mehta, 2000).

The effectiveness of Internet advertising has been the subject of extensive interest from the academics and marketing managers (Soares and Pinho, 2014). The Internet is generally considered to either be a substitute for or a complement to traditional media (Silk et al., 2001;
Dijkstra et al., 2005; Olbrich and Schultz, 2014). According to Ashcroft and Hoey (2001), like other products and services, the AIDA model can be applied to Internet services too. Based on AIDA advertisement model, the following hypotheses are proposed:

**H1.** Drawing attention toward modification of energy consumption in Internet ads will affect audience behavior (action).

**H2.** Creating interest in the modification of energy consumption in Internet ads will affect audience behavior (action).

**H3.** Creating a desire for modification of energy consumption in Internet ads will affect audience behavior (action).

### 3. Methodology

The present research is a descriptive study aiming to evaluate the effectiveness of Internet ads concerning modification of consumption in the Nowshahr and Chalus cities, Iran. The objectives of the study make it an applied research, and its methodology is a survey.

The research population consisted of citizens of Nowshahr and Chalus cities, and data were gathered through classified sampling method. Nowshahr and Chalus cities were divided into five districts, and convenience sampling was conducted according to the number of household in each district. Based on a primary sampling of 30 individuals, standard deviation (SD) has been calculated. According to this SD, the confidence level of 95 per cent and with the estimation error of 0.05, the size of the sample was approximated to 408 individuals. Table I shows the demographic characteristics of the statistical sample.

In this research, the literature review was chiefly done through library methods using books, articles and theses, as well as Internet sources. Data were gathered through field study using a standard questionnaire. The questionnaire consisted of two sections: one for general items and another for specialized items. General items were used to gather demographic information about respondents. The specialized section consisted of 16 items

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Frequency</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>212</td>
<td>52</td>
</tr>
<tr>
<td>Female</td>
<td>196</td>
<td>48</td>
</tr>
<tr>
<td><strong>Age, years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>74</td>
<td>18.1</td>
</tr>
<tr>
<td>26-35</td>
<td>136</td>
<td>33.3</td>
</tr>
<tr>
<td>36-45</td>
<td>112</td>
<td>27.5</td>
</tr>
<tr>
<td>46-55</td>
<td>83</td>
<td>20.3</td>
</tr>
<tr>
<td>&gt; 55</td>
<td>3</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>209</td>
<td>51.2</td>
</tr>
<tr>
<td>Married</td>
<td>199</td>
<td>48.8</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>97</td>
<td>23.8</td>
</tr>
<tr>
<td>BA</td>
<td>200</td>
<td>49</td>
</tr>
<tr>
<td>MSc</td>
<td>91</td>
<td>22.3</td>
</tr>
<tr>
<td>PhD</td>
<td>20</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Table I. Sample demographics
(adapted from Jolodar, 2011) based on Likert’s five-point scale from “strongly agree” to “strongly disagree”, and was used to gather opinions of respondents.

The questionnaire was first evaluated by university professors. The required changes were applied, and thus, the content validity of the questionnaire was verified. To test the construct validity, the confirmatory factor analysis was used. Also, the Cronbach’s alpha was applied to test the reliability of the questionnaire. Reliability is one of the technical characteristics of a measurement tool. It shows the extent to which the measurement tool can provide similar results under similar conditions. Table II shows the results of the factor analysis and reliability tests. As observed, all factor loadings have a good value (greater than 0.50); also, all of the reliability estimates are greater than 0.70.

4. Results
After providing a theoretical model for the phenomenon under study and measuring the hidden variables, it is necessary to analyze the research model to determine whether the empirical data support the theoretical models or not. However, because of the multiple components presented in the research model, researchers decided to first test the measurement models of the framework. It is reasonable to say that the evaluation of structural relations between hidden variables is more logical and more meaningful when hidden structure measures are acceptable according to scientific criteria.

<table>
<thead>
<tr>
<th>Items for each construct</th>
<th>Factor loading</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I see an advertisement related to the modification of energy consumption, I close it (R)</td>
<td>0.69</td>
<td>0.83</td>
</tr>
<tr>
<td>These advertisements are understandable</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>The content of these advertisements are rememberable</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td><strong>Interest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual components of these advertisements are acceptable</td>
<td>0.74</td>
<td>0.93</td>
</tr>
<tr>
<td>These advertisements have made me sensitive to energy costs</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>These advertisements have made me sensitive to energy consumption in home appliances</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>These advertisements have made me more aware of how to save energy</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>These advertisements have created a positive feeling about the value of saving energy for my family and my country</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td><strong>Desire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>These advertisements have persuaded me to consider their message</td>
<td>0.65</td>
<td>0.82</td>
</tr>
<tr>
<td>These advertisements have encouraged me to modify energy consumption habits</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>These advertisements have made me feel that saving energy is not unexpected</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>These advertisements have encouraged my desire to use energy-efficient appliances</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>These advertisements have caused me to suggest my friends to buy energy-efficient appliances</td>
<td>0.91</td>
<td>0.76</td>
</tr>
<tr>
<td>These advertisements have caused me to use energy-efficient appliances versus traditional ones</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>These advertisements have resulted in reduced energy cost</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>These advertisements have caused my family members to save energy</td>
<td>0.66</td>
<td></td>
</tr>
</tbody>
</table>

Table II. Results of factor analysis and reliability tests
Incorporating weak fit indexes into the structural equation model means that measurement models can cause mistakes in analyzing structural relations between the hidden variables. In other words, the most important step in SEM statistical analyses is to evaluate how much the models have a good fit to the data. For this purpose, each measurement model should be analyzed separately. The results showed that all measurement models have a good fit. Next, the overall fit indices of the main model were tested. General fit indices of the main model are presented in Table III.

According to Table III, the results are as follows:

- Regarding chi-square/degree of freedom (CMIN/DF), it should be noted that the further the chi-square is below 3, the better the fitness of the model. The results show that CMIN/DF is suitable for the measurement model.

- One of the most valid indexes for evaluating model fitness is goodness of fit index (GFI). It is similar to $R^2$ in multivariate regression. The closer the GFI is to 1.00, the better the fitness of the model for the data. Here, GFI > 0.90 shows a good fitness.

- If adjusted goodness of fit index (AGFI) and normed fit index (NFI) are greater than 0.90, then the model has a good fit. In this study, AGFI > 0.90 and NFI > 0.90 show a good fitness.

- If the comparative fit index (CFI) is between 0.90 and 0.95, it is an indication of acceptable model fit, and the CFI greater than 0.95 shows a very good model fit. In this study, CFI > 0.90 shows a good fitness.

- The root mean square error of approximation (RMSEA) is based on the residual matrix. For an acceptable model, this index should be 0.1 or less. In this study, RMSEA < 0.1 shows a good fitness.

After evaluation and verification of the main model, research hypotheses were analyzed through path analysis testing. Hypotheses testing is a research step in which the researcher tests the hypotheses about the research problem proposed at the beginning of the study using results achieved from the sample data. In this regard, different statistical methods have been proposed so far, but most of them are similar. The present study used path analysis testing for this purpose. As shown in Table IV, all of the three paths specified in the hypothesized model are found to be statistically significant. When critical ratios are in the range of $-1.96$ to $1.96$, the hypothesis will reject (Hair et al., 1998).

Table IV shows that all research hypotheses were verified. Therefore, Internet ads regarding modification of energy consumption conform to the AIDA model in Nowshahr and Chalus cities.

<table>
<thead>
<tr>
<th>Indices name</th>
<th>Recommended cut-off values</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square/degree of freedom (CMIN/DF)</td>
<td>&lt; 3.00</td>
<td>2.25</td>
</tr>
<tr>
<td>Goodness of fit index (GFI)</td>
<td>&gt; 0.90</td>
<td>0.93</td>
</tr>
<tr>
<td>Adjusted goodness of fit index (AGFI)</td>
<td>&gt; 0.90</td>
<td>0.91</td>
</tr>
<tr>
<td>Normed fit index (NFI)</td>
<td>&gt; 0.90</td>
<td>0.94</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>&gt; 0.90</td>
<td>0.95</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMSEA)</td>
<td>&lt; 0.10</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Table III. Fit indices of the model
5. Discussion and conclusion
The aim of this study was to evaluate Internet advertisement effectiveness in the filed of energy consumption. Three hypotheses were proposed and tested. This section will briefly discuss the results achieved from these hypotheses.

According to obtained results, the standard regression coefficient for the first hypothesis is $0.29 (p < 0.01)$, and therefore this hypothesis is confirmed. In other words, drawing attention to modification of energy consumption in Internet ads affects audience behavior. The result of this hypothesis is in line with the results of Khodakarami Arzanaq (2012). The latter study evaluated the effect of commercial advertisement effectiveness on the behavior of consumers of Tabbarok food products based on AIDA. The results showed that the company’s advertisements were effective in drawing the attention of the audience and thus, the company could achieve its predefined goals.

The standard regression coefficient for the second hypothesis was $0.52 (p < 0.001)$, and thus this hypothesis is confirmed too. Therefore, creating interest in the modification of energy consumption in Internet ads affects audience behavior. Asadi (2001) studied the advertisement programs of Refah Bank and their impact on attracting customers to create savings accounts. The research used AIDA model for evaluating advertisement effectiveness. According to this model, ads should go through a four-step procedure, namely, drawing attention, arousing interest, creating desire and attracting customers’ action. The results showed that Refah Bank ads affect each of these four steps regarding bank awards granted for this type of account.

The standard regression coefficient for the third hypothesis was $0.43 (p < 0.001)$, and thus this hypothesis is confirmed. Therefore, creating desire in Internet ads about modification of energy consumption affects audience behavior. This result is in line with the results of Khoramdel (2010) who evaluated the advertisement effectiveness in electronic banking based on the AIDA model. In addition to the four previously mentioned steps, this research also evaluates the impact of advertisement on creating awareness, knowledge, trust, satisfaction and loyalty in the customer. The model was tested on customers of independent branches of Melli Bank in Tehran, and the positive effect of ads on all factors was confirmed. Contrary to this, Monshi (2010) studied advertisement strategies of non-profit organizations and their impact on public participations in the Aid Committee in Fars province based on AIDA and found that although the organization’s advertisements were not successful in AIDA, there was a positive relationship between the advertisements and the objectives. Clearly, the hierarchical AIDA model has been confirmed in most of the studies; it is the intensity of impact at different levels of the model that could be different.

5.1 Managerial implications
The challenge of reducing energy consumption has become the focus of research development, industrial initiatives and different governmental schemes (Motawa and Oladokun, 2015). According to several studies, for reducing energy consumption, technological innovations alone seem inadequate and targeting energy-related behavior of

<table>
<thead>
<tr>
<th>Path</th>
<th>B</th>
<th>C.R.</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Attention to action</td>
<td>$0.29^{***}$</td>
<td>3.05</td>
<td>Supported</td>
</tr>
<tr>
<td>H2 Interest to action</td>
<td>$0.52^{***}$</td>
<td>7.31</td>
<td>Supported</td>
</tr>
<tr>
<td>H3 Desire to action</td>
<td>$0.43^{***}$</td>
<td>6.15</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Table IV.
Results of the structural model

Notes: $^{***}p < 0.001; ^{**}p < 0.01$
people is equally essential (Abrahamse and Steg, 2011). Advertising, as an important social event, represents a significant change in beliefs, values and individuals’ behavioral intention which influence their lifestyles (Usman et al., 2010; Feiz et al., 2013).

Over the past few decades, attitude toward advertising has been extensively researched, and it was found that individuals’ attitude toward advertising has a positive effect on subsequent behavioral intention (Yoo et al., 2010). From both academic and marketing practitioner viewpoints, the hierarchy-of-effects model as a comprehensive explanation of how advertising works has received broad attention and, therefore, is a base for measuring the effectiveness of advertising (Yoo et al., 2010; Duffett, 2015). As the results of this study showed, the AIDA model can be successfully used for modification of energy consumption.

The ADIA model is a “learn-feel-do” structure that needs communication to increase awareness and change attitudes before the consumer will consider buying (Koekemoer, 2004). Therefore, marketers, advertising agencies and, in general, all organizations, institutions and corporations should try to maintain target audience from one step to the next; for example, after primarily drawing a group of people’s attention, this group should not later become smaller. This can be achieved through purposeful advertising that augments interest and desire in the audience, and finally, changes their behavior. In fact, every advertisement is designed with a specific purpose, which later is evaluated based on that purpose. This means that at the level of drawing attention, the main objective is to increase the consumers’ awareness about the necessity of modifying the accepted patterns of energy consumption. The next stage, after creating or increasing the awareness, is to clarify the significance of the problem to the audience. Similarly, in the next stage, which is creating desire, the advantages of this modification for consumers, as well as the general consequences, should be highlighted. This will increase the desire to change and will ultimately result in changes in actions and behaviors. In this regard, policymakers should advertise on the Internet and social media sites as well as create a controversy on the concept of energy consumption so that people can talk about it. In addition, they should provide up-to-date and timely information about the necessity of energy management and monitor the comments and feedback from people and respond quickly (Hassan et al., 2015).

5.2 Limitations and future research direction
The present research relied on a cross-sectional survey design and a convenience sampling method, which makes it hard to generalize the results (Boateng and Okoe, 2015). Future studies can benefit from using a longitudinal technique and a random sampling method in this regard. In this research, the AIDA model is one of the traditional response hierarchy models that has been used. Other traditional response hierarchy models can be used for evaluating the Internet advertisements for modification of energy consumption. Recently, some studies have identified different variables or factors as antecedents to individuals' attitudes toward advertising (Chang et al., 2013; Ariffin et al., 2016). However, much research is needed to identify relevant factors as antecedents to individuals’ attitudes toward advertising for modification of energy consumption.

References


Monshi, F. (2010), “Study on TV advertising strategy nonprofit organizations and its impact on popular participation (Based on Aida), Case Studies Committee Emdad”, MA thesis, Department of Management, Payame Noor University, Sari.


**Corresponding author**

Javad Khazaei Pool can be contacted at: khazaei110@gmail.com

For instructions on how to order reprints of this article, please visit our website: [www.emergalgpublishing.com/licensing/reprints.htm](http://www.emergalgpublishing.com/licensing/reprints.htm)

Or contact us for further details: permissions@emeraldinsight.com
The effect of innovativeness and customer-oriented systems on performance in the hotel industry of Iran

Mohammad Reza Jalilvand
Faculty of Management, University of Tehran, Tehran, Iran

Abstract
Purpose – Innovation and new services’ development are important strategic features to pledge sustainable wealth and growth for every industry, but in particular for those industries where markets are saturated and clients choose services and products from all over the world, such as in the case of the hospitality industry. In the hospitality context, there is little research on innovation. The purpose of this study is to understand how innovation and customer-oriented value systems can affect performance in the context of the hospitality industry.

Design/methodology/approach – A comprehensive literature review is conducted to identify the major indices of innovation in the context of the hospitality industry. A self-administered questionnaire survey was used, and the target population included the managers and employees who work in the 3- and 4-star hotels of Isfahan. The sample size was 226. A convenience sampling approach was used to collect the required sample.

Findings – The results of structural equation modelling indicated that customer orientation and innovativeness orientation have a significant influence on hotel performance. Furthermore, customer orientation influenced the innovativeness orientation of hotel employees.

Originality/value – This paper provides a valuable insight into the measurement of innovation, customer orientation and performance in the hospitality industry and offers a foundation for future hospitality innovation research.

Keywords Hotel performance, Iran, Customer orientation, Innovation orientation

Paper type Research paper

1. Introduction
Throughout history, hospitality has been a phenomenon accompanied by immense innovativeness. Innovation plays an important role in services and, undoubtedly, is particularly important for the hospitality industry (Hjalager, 2002). Innovation is at the heart of hospitality firms’ success because it allows them to enhance the quality of products, cut costs, increase sales and profits, increase efficiency, meet the changing needs of customers, gain a greater market share and differentiate themselves from rivals (Chang et al., 2011). However, hospitality innovation is an understudied arena. Ottenbacher and Gnoth (2005, p. 206) argued that due to the lack of such knowledge, “managers often rely on speculation, gut feeling, and their own restricted experience about the key factors to innovation success”. Without innovation, firms cannot survive competition, but there is always a balance between the need for efficient processes and the need for change built upon years of practice. In the hospitality industry, it means understanding and addressing customer needs as well as providing a unique innovative experience (Chen, 2011). The value systems of “customer orientation” and “innovativeness” show firms that need to balance an efficient performance and responsiveness to change in today’s highly competitive business environment (Ottenbacher, 2007). Innovativeness indicates a firm culture that encourages the introduction
of new products, processes and ideas that constitute strategic orientation in the long term (Tajeddini and Trueman, 2008).

Customer orientation originated from a set of beliefs that put the interests of customer first and ahead of other stakeholders, making part of a broader corporate culture (Chen, 2011). The restaurant sector, for example, encounters various challenges as a result of high competition, price conscious consumers, low barriers to entry, government regulation, rising food prices and high labour costs (Restaurant and Catering Australia, 2014). Furthermore, the restaurant industry is dominated by over 99 per cent of restaurant businesses classified as small and medium enterprises (ABS, 2014). According to Restaurant and Catering Australia (2013), 63 per cent of restaurant businesses achieve an average net profit of just 2 per cent after taxes. Hence, survival rates in the hospitality industry are low. Thus, understanding the performance of restaurants is the main focus of this research as these businesses are critical for the success of the tourism and hospitality industry. Ottenbacher and Gnoth (2005) suggested that restaurants can cut costs, improve quality and reputation and increase sales and profits through innovation.

An on-going innovation process helps hospitality firms to keep their portfolio ahead of the competition which establishes a long-term competitive advantage (Ottenbacher and Harrington, 2007). However, there is a significant gap in understanding how innovation and customer-oriented value systems influence performance in small- and mid-sized hospitality firms. This research suggests that employees in the hotel industry are more likely to be customer orientated and innovative if they are empowered to make decisions that can improve the performance of hospitality firms. In the other words, there is a need to a more rigorous examination of innovation and customer orientation as the major drivers of hospitality performance. In this way, this research aims to make an important contribution by adding to the scant empirical research on the management of the hospitality industry from the perspectives of employee behaviour and company performance in Iran, a country that represents a benchmark in hospitality management and where the majority of local hospitality businesses are owned, managed and staffed by Iranian nationals.

2. Literature review

A literature review was conducted to study the state of the art of the different research streams relating innovation and customer orientation factors and their relationships with performance. A search of reliable research papers and conceptual papers was conducted. Research was also conducted using books and conference proceedings. Although there were differences in expression, the following section analyses how the factors of innovation and customer orientation are associated with firm performance in an attempt to conceptualize the research model.

2.1 Hotel sector of Iran

The possible lifting of international sanctions on Iran’s key energy and financial sectors has already shifted the attention of global business leaders to the largest closed market on the verge of opening. Since 2014, business interest from around the world in various sectors of Iran has been growing exponentially and driven by visitations of business executives preparing to do business in Iran. Above and beyond the expected tourism growth in a full of range of segmentations – such as cultural, religious, medical, eco-tourism and adventure – business tourism alone carries a heavy deal of consideration in the aftermath of sanction removals. Iran is home to not more than a few locally branded hotels that would to some extent meet the global hospitality standards (Fakharyan et al., 2014). The lack of internationally branded accommodation and quality business hotels is indeed an immediate market gap and a critical shortcoming in the next coming years and beyond. As a result of
prioritization of the Travel and Tourism sector under Iran’s 2025 vision, the current Iranian Government has also planned for structural improvements (through incentives) for privatization of the hotel and hospitality industry.

This means that with a sudden tourism boom, hotel average daily rates (ADR) – as one of the most important indicators for hotel valuation and feasibility assessments – will witness an organic growth to reach a regional standard. As a result, hotel development projects will begin to attract a significant share of investments from the domestic private sector. In line with the expected growth of hotel development projects, there is one other element that requires critical attention while opening space for a lucrative investment opportunity: quality hotel management, with internationally branded and operational standards (Mokhtaran et al., 2015). Iran will soon witness an explosive business boom driven by executives hoping to either return or to start their business in the aftermath of the nation’s return to the global trade map. Hence, investments in both management and development of upscale business hotels in Iran will remain an untapped market gap subjected to an exponentially growing demand in the years to come.

2.2 Previous research on hospitality innovation

The existing literature about innovation in the service industry is very limited (Ettlie and Rosenthal, 2011), and it is even more limited, both empirically and theoretically, for the hospitality industry (Williams and Shaw, 2011). This situation is a result of conceptual problems associated with the characteristics of service, hospitality and restaurants and the lack of available data. The attributes of services are clearly present in restaurant and hospitality firms, affecting how innovation manifests itself in these firms (Orfila-Sintes and Mattsson, 2009). This implies that each of the hotel industry attributes are taken into account in innovation activities, such as high content of information in services, close interaction with clients and the importance of the human factor (Orfila-Sintes et al., 2005). Hospitality firms have specific attributes with respect to innovation. The configuration of hospitality service attributes are as follows:

- production and consumption occur at the same time;
- tangible and intangible elements;
- storage and transport are not possible, which increases the difficulty of managing intangible aspects, because intangible and tangible elements are interrelated; and
- variability.

Given these attributes, innovation requires concentrating on the close relationship with customers and employees’ commitment. Service innovations need the participation of clients and staff cooperation (Orfila-Sintes and Mattsson, 2009).

Intangible and tangible service components are correlated in the hospitality industry. This means that the intangible attributes of services depend on how the hospitality firms provide physical and tangible attributes of a service. In turn, these service attributes are dependent on intangible and tangible aspects integrated or not integrated into the provided services such as how employees of hospitality firms treat customers. There are three research streams of hospitality innovation. The first identifies critical procedures for developing hospitality innovation (Ottenbacher and Harrington, 2007), the second concentrates on developing a typology for hospitality innovation (Orfila-Sintes and Mattsson, 2009; Ottenbacher, 2007) and the third examines factors that may produce hospitality innovation (Hjalager, 2002; Ottenbacher and Gnoth, 2005; Ottenbacher, 2007).

Table I summarizes recent studies on innovation in the hospitality industry.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Investigated constructs</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee et al. (2016)</td>
<td>Human capital, innovation, entrepreneurial self-efficacy (ESE) and restaurant performance</td>
<td>Data obtained from 198 cafe and restaurant owners Structural equation modelling</td>
<td>Restaurant innovation activities and the owner’s ESE positively influence restaurant performance ESE had varying effects on restaurant performance, with “Developing new product and market opportunities” having the strongest effect In contrast, the entrepreneur’s human capital, representing their levels of business ownership experience and entrepreneurship/industry education, did not significantly affect restaurant performance Human capital indirectly affected performance through innovation and ESE</td>
</tr>
<tr>
<td>Nieves and Segarra-Cipr (2015)</td>
<td>Human capital, integration capability, social relationships with industry agents, social relationships with external change agents, management innovation and firm size</td>
<td>Data obtained from 109 firms operating hotel Hierarchical regression analyses</td>
<td>Both the internal resources and the relations with external change agents determine the introduction of management innovations However, access to knowledge possessed by tourist industry agents does not influence management innovation</td>
</tr>
<tr>
<td>Souto (2015)</td>
<td>Successful incremental innovation, successful radical innovation, relevant business model innovation and relevant business concept innovation</td>
<td>Interviews with 115 senior managers of hotels Structural equation modelling via partial least squares</td>
<td>Findings show the effects of business model innovation and business concept innovation The adoption of new models and concepts that support innovation is shown to be important The keys to successful incremental and radical innovations lie in adopting a new contextual and conceptual framework through which innovations can occur and customer needs can be met, thereby giving rise to new competitive advantages</td>
</tr>
<tr>
<td>Tajeddini and Trueman (2014)</td>
<td>Perceptions of innovativeness</td>
<td>In-depth interviews with top managers and owners</td>
<td>The findings relate to themes such as Leavitt’s diamond of task, structure, people and technology, with technology featuring quite strongly in a number of responses. It reflects how top managers and owners perceive that innovativeness can gain a competitive advantage by differentiating one hotel from another, and the role of national culture in developing that advantage</td>
</tr>
<tr>
<td>Thomas and Wood (2014)</td>
<td>External and personalized sources of knowledge, absorptive capacity and competitive advantage</td>
<td>Data obtained from 259 senior managers working in UK hotels Structural equation modelling</td>
<td>Current conceptions of absorptive capacity have limitations when applied to tourism enterprises Absorptive capacity is re-conceptualized to overcome these deficiencies</td>
</tr>
<tr>
<td>Authors</td>
<td>Investigated constructs</td>
<td>Methodology</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Chen and Elston (2013)</td>
<td>Macro-environmental mix (general national/regional conditions), personal characteristics, entrepreneurial process and entrepreneurial outcomes</td>
<td>Data obtained from 229 small restaurant entrepreneurs MANOVA</td>
<td>Three main results: first, small restaurant entrepreneurs were characterized by one of three distinct motives in that they were autonomy seekers, family protectors or profit seekers. Second, their funding sources were predominantly private rather than institutional. Third, the entrepreneurial business was the main source of the family’s income.</td>
</tr>
<tr>
<td>Tajeddini and Truemanc (2012)</td>
<td>Individualism, power distance, long-term orientation, innovativeness, customer orientation and hospitality performance</td>
<td>Data were generated from 96 businesses in the hotel industry Structural equation modelling</td>
<td>Cultural factors are positively associated with customer orientation, innovativeness and company performance.</td>
</tr>
<tr>
<td>Williams and Shaw (2011)</td>
<td>Internationalization and innovation</td>
<td>Literature review</td>
<td>Their relationship can be conceptualized in three ways: internationalization is a form of innovation, successful internationalization requires innovation and internationalization requires firms to have superior knowledge.</td>
</tr>
<tr>
<td>Aldebert et al. (2011)</td>
<td>A framework for analysis of tourism industry: actors, networks, innovation, knowledge base and technology</td>
<td>Literature review</td>
<td>They highlighted the intensity of innovation activity in tourism, and gave evidence about the rapid evolution of the tourism industry as well as the substantial impact of ICT on this evolution.</td>
</tr>
<tr>
<td>Chang et al. (2011)</td>
<td>Training, hiring, incremental innovation, radical innovation, firm age, firm size and firm type</td>
<td>Data were obtained from 196 independent hotels and restaurants Multiple regression analysis</td>
<td>Both hiring multi-skilled core customer-contact employees and training core customer-contact employees for multiple skills have significant and positive effects on incremental and radical innovation among hotel and restaurant companies. The two human resource management practices have a negative joint impact on incremental but not radical innovation. Important determinants of innovation are acknowledged, including the role of entrepreneurship, technology push and the existence of territorial industry clusters.</td>
</tr>
<tr>
<td>Hjalager (2010)</td>
<td>Innovation categories in tourism and determinants</td>
<td>Literature review</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Investigated constructs</td>
<td>Methodology</td>
<td>Findings</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tajeddini (2010)</td>
<td>Customer orientation, entrepreneurial</td>
<td>A survey on 156 hotel</td>
<td>The findings support aspects of prior research, but also provide</td>
</tr>
<tr>
<td></td>
<td>orientation and innovativeness</td>
<td>managers</td>
<td>some new insights by exploring customer orientation and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structural equation</td>
<td>innovativeness simultaneously and revealing how these factors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>modelling</td>
<td>impact upon the performance of the Swiss hotel industry</td>
</tr>
<tr>
<td>Blichfeldt (2009)</td>
<td>Innovation</td>
<td>Literature review</td>
<td>The study reveals a series of reasons why this specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>enterprise has been innovative</td>
</tr>
<tr>
<td>Tajeddini and Trueman (2008)</td>
<td>Innovativeness</td>
<td>In-depth interviews with 13 marketing managers and owners</td>
<td>If decision makers wish to influence business performance, they need to be aware of this comprehensive insight into the potential for innovativeness</td>
</tr>
<tr>
<td>Tajeddini et al. (2006)</td>
<td>Market Orientation, Innovativeness</td>
<td>Regression analysis</td>
<td>The results show that customer orientation has a positive effect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>on performance as well as the level of innovativeness in each company</td>
</tr>
</tbody>
</table>
2.3 Hospitality performance

The hotel sector is an important contributor to the tourism and hospitality industry. However, their success is highly dependent on the performance of the small businesses that are independent and dominate the sectors. For example, research on restaurant performance has historically concentrated on public firms and chain/franchise restaurants, measured by stock market valuations (Choi et al., 2011; Ham and Lee, 2011). Stock market assessments are inaccessible for small, independent restaurants that constitute 99 per cent of all business in the restaurant sector (ABS, 2014). Unlike the financial records of large businesses which are made public, the records of small, independent firms remain private and are inaccessible to researchers.

Therefore, using subjective rather than objective measures of performance is widely used and adopted as acceptable measurement methods in small business research (Hallak et al., 2011). It is due to the difficulties in obtaining actual financial records of small- and medium-sized businesses. Prior research on small owned restaurants using an entrepreneurship framework have evaluated firm performance using the entrepreneur’s subjective measurements of firm performance relating to profitability, sales growth, cash flow, return on investment, net profit, market share and overall performance (Lee and Lim, 2009).

2.4 Customer orientation and performance in the hospitality industry

Narver et al. (2000) believe that customer orientation may create competitive advantage by providing product value that is scarce, hard to imitate and of superior quality. This value creation happens by enhancing benefits to customers while declining costs (Nwokah and Maclayton, 2006). Customer orientation can be considered as a strategy to achieve critical information about the needs of customers (Salomo et al., 2003). Brannback (1999) suggested that customer orientation is the core of business success, and everyone in the firms should understand and know about its importance.

Dawes (2000) argued that if firms have a greater understanding of their customer preferences, they can make financially profitable offerings. In fact, customer orientation has a favourable effect on financial performance of business (Deshpandé et al., 1993). Although numerous studies have documented the positive influence of customer orientation on business performance, few have explored this topic in the hospitality industry (Yilmaz et al., 2005). Therefore, it hypothesizes that:

H1. Customer orientation is positively related to firm performance in the hospitality industry.

2.5 Innovation and performance in the hospitality industry

Damanpour and Wischnesvsky (2006) define innovation as the development and use of new ideas (new service/product or operation process) or behaviours in firms. In particular, an innovativeness approach implies the ability to adopt new ideas for the firm, even though the ideas may have been developed elsewhere (Angle and Van de Ven, 2000). At the organizational level, it is usual that innovation is considered in terms of a culture that adopts new ideas, indicating openness to innovation (Fateh-Rad et al., 2015). When organizational members are willing to consider innovation, they feel that innovation will improve the function of the firm or they may be sceptical about innovation. In this respect, Hult et al. (2003) stated that some organizational cultures are against innovation, whereas Van de Ven (1986) views the need to manage an organizational culture if personnel recognize the value of new ideas within the firm.
Hult et al. (2003) argued that innovativeness is the first construct of innovation, and the notion of openness to new ideas is a key aspect of a firm’s culture. In fact, innovativeness is one of the most important strategic orientations for organizations to achieve long-term success (Martinez-Sanchez and Orfila-Sintes, 2009). Prior research indicated that innovativeness has a positive influence on venture performance in the hospitality industry (Tajeddini, 2010). Martinez-Ros and Orfila-Sintes (2009) found that non-owner managers of hotels in the Balearic Islands are more innovative than owner managers, and that managers have the strongest effect on innovative behaviour. Furthermore, Ottenbacher (2007) in his study of the hospitality industry in Germany revealed that successful innovation is customer driven. de Jong et al. (2003) shows that hotel, retailers and catering firms provide customers with new products less often than other sectors. It means that despite the benefits of innovativeness as a valuable tool for businesses, the hospitality industry could not respond quickly, and there is limited empirical research about how to enhance hospitality firms’ performance. Hence, it can be suggested that:

H2. Innovativeness is positively related to firm performance in the hospitality industry.

2.6 Customer orientation and innovativeness

Entrepreneurial organizations need to be innovative and proactive, if they want to be market leaders rather than followers, and take advantage of first-mover (Tajeddini and Mueller, 2009). This process persuades an entrepreneurial organization to be innovative and predict the needs of customers (Lumpkin and Dess, 1996), thus providing leverage for business strategy and creating radical innovations known as the capability of core value-creation (Appiah-Adu and Singh, 1998). In this regards, the prediction of future customer needs is central for business superiority (Kandampully and Duddy, 1999), and is positively associated with innovation in the hospitality industry (Martinez-Sanchez and Orfila-Sintes, 2009).

Previous research has indicated an insignificant relationship between innovativeness and customer orientation, possibly because of a conflict with cultural, economic and competitive factors originating from intense competition (Matsuo, 2006). However, this research suggests that a customer-oriented hospitality business is likely to be more innovative as originality can lead to customer satisfaction and profitability (Figure 1). As a result, it is suggested that:

H3. Customer orientation is positively related to innovativeness in the hospitality industry.

Figure 1. The conceptual model of innovativeness in the hospitality industry.
3. Methodology

3.1 Data collection and sample
The aim and the research questions have a direct link to the choice of research methodology. To test the hypotheses, the author collected data on customer orientation, innovativeness and performance by asking senior managers and employees of 3- and 4-star hotels to fill out a 10-min questionnaire. According to Tourism and Cultural Heritage Organization of Isfahan, there are eighteen 3- and 4-star hotels in Isfahan. Each respondent is selected based on a convenience-sampling approach. Samples were collected in Isfahan, Iran, because it is known as one of the most attractive tourism and hospitality destination in the world. The author referred to the hotels of Isfahan and distributed a self-administrated questionnaire to them. A total of 226 respondents were selected.

3.2 Measures and pre-test
All model variables were measured with items adapted from prior research (Table II). The constructs of innovativeness, customer orientation and firm performance were each measured with several items. All items were measured on a five-point scale. To increase measurement reliability, a pre-test study was conducted. In this pre-test, 30 employees were asked to fill out a preliminary version of the questionnaire. When alpha scores are above 0.70 for all constructs, the instrument is reliable (Nunnally, 1978, p. 245). For this research, the author operationalized firm performance based on a hospitality firm (hotel) owner’s subjective assessment of their firm’s financial performance – such as profit goal achievement, sales goal achievement and ROI – marketing performance, examined customer retention, service quality and customer satisfaction over the past three years.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Items</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer orientation</td>
<td>(CR1) Regular measures of customer service</td>
<td>Deshpandé et al. (1993)</td>
</tr>
<tr>
<td></td>
<td>(CR2) Product development based on customer information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR3) Knowing competitors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR4) Sense of customers' value</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR5) Customer focused</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR6) Product differentiation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR7) The customer’s interest always comes first</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR8) Products are the best</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CR9) Business exists to serve customers</td>
<td></td>
</tr>
<tr>
<td>Innovativeness</td>
<td>(IN1) Management seeks innovative ideas</td>
<td>Hurley and Hult (1998)</td>
</tr>
<tr>
<td></td>
<td>(IN2) Innovation is accepted in the organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(IN3) Innovation is accepted by the management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(IN4) Penalizing people for new ideas that do not work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(IN5) Innovation is encouraged</td>
<td></td>
</tr>
<tr>
<td>Marketing performance</td>
<td>(MP1) Customer retention</td>
<td>Kirca et al. (2005), Hooley et al. (2000)</td>
</tr>
<tr>
<td></td>
<td>(MP2) Quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(MP3) Customer segments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(MP4) Customer satisfaction</td>
<td></td>
</tr>
<tr>
<td>Financial performance</td>
<td>(FP1) Return on investment (ROI)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(FP2) Sales goal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(FP3) Profit goal</td>
<td></td>
</tr>
</tbody>
</table>

Table II. Research instrument and its resources
3.3 Validity and reliability analysis

As mentioned above, this study used Cronbach’s $\alpha$ value as a tool for reliability examination. If a value was higher than 0.70, then it indicates that the measurement reliability is high. The higher the Cronbach’s $\alpha$ value, the higher the internal consistency is. Validity means that the instrument can measure the level of the intended-to-measure object. Content validity and construct validity are used in this research to test the questionnaire validity. Content validity is performed based on the professional ability of the researcher to judge objectively if the selected scale can measure the dimension that the researcher intended to measure in a correct way. The dimensions and items explored in this research are based on relevant theory from the review of literature.

Additionally, this research conducts a pre-test and makes some revisions before setting out the questionnaire. This study uses further confirmatory factor analysis (CFA) to examine the construct validity of the questionnaire. In CFA, the questionnaire items are limited to only load on their respective factor, and the covariances between latent variables are obtained. When the factor loadings of the questions are all higher than 0.4, it means the overall quality of the questionnaire is good and has acceptable construct validity. If the validity and reliability of the instrument are confirmed, the hypothesis testing is conducted by structural equation modelling (SEM).

3.4 Structural equation modelling

SEM is used to examine the relationships between the latent dimensions in the proposed confirmatory model. Four fit indices including chi-square, root mean square error of approximation (RMSEA), comparative fit index (CFI) and the Tucker–Lewis index (TLI) are used in CFA to assess the fit of the proposed model. The model chi-square is the most basic fit index. It is used to examine the null hypothesis that the covariance structure of the proposed model is the same as the observed covariance matrix. The value of chi-square results from the statistical criterion minimized in the maximum likelihood estimation. The RMSEA includes a built-in correction for model complexity and is resilient to the size of the sample.

Brown and Cudeck (1993) proposed the rules of thumb for interpreting the RMSEA as follows: greater than 0.10 = unacceptable or poor fit, between 0.08 and 0.10 = mediocre fit, between 0.05 and 0.08 = reasonable fit and less than 0.05 = close fit. The CFI is the third index used to assess the model fit to the data. Hu and Bentler (1999) suggested that CFI values of greater than 0.90 indicate a good fit of the proposed model to the data. TLI is the same as CFI, but penalizes for the complexity of model. Lower values (approaching 0.0) show a worse fit, whereas higher values (approaching 1.0) show a good fit. Hu and Bentler (1999) proposed a cut-off value of 0.95 for a good model fit. The standardized path coefficients for the relationships proposed in the SEM are assessed for significance. Particular attention is given to the estimated path coefficients between latent variables.

4. Data analysis and results

4.1 Sample profile

Of the total sample of 226 respondents, 81.85 per cent (185) were male and 18.16 per cent (41) were female. A large majority of the respondents’ age was between the ranges of 26-35 (30.08 per cent), 36-45 (32.30 per cent) and 25 or below (19.91 per cent). In addition, the majority of the respondents’ education level (59.74 per cent) was degree. Descriptive statistics are displayed in Table III.
4.2 Measurement model

The proposed structural model was estimated by SEM, which included a test of the overall model fit and individual tests of the significance of the relationships among the variables. These tests indicated the relationship between innovativeness orientation, customer orientation and hospitality firms’ performance. The estimations of the parameters and the overall fit index of the measurement model are based on the maximum likelihood (ML) method. The basic conditions assumed for the use of ML estimation are met or closely approximated in the study. Furthermore, the sample is sufficiently large ($n = 226$ cases), over the recommended size of 200 cases; the scale of observed variables is continuous; and no violations of multivariate normality are found in the survey responses.

As presented in Table IV, the reliability of the measurement items was verified using Cronbach’s $\alpha$ to assess the internal consistency of the constructs in the applied model. The level of internal consistency for each construct was acceptable, with the alpha ranging from 0.802 to 0.891, which exceeded the minimum hurdle of 0.60. All measurement items had standardized loading estimates of 0.4 or higher (ranging from 0.510 to 0.691) at the alpha level of 0.05, indicating the convergent validity of the measurement model. Construct reliability was verified to estimate convergent validity; each construct had an acceptable construct reliability, with the estimates ranging from 0.795 to 0.836.

In addition, because the average variance extracted (AVE) from all four constructs exceeded the minimum criterion of 0.5 (ranging from 0.593 to 0.670), the convergent validity was assured (Hair et al., 1998). To test the discriminant validity among the constructs, the authors estimated correlations among the constructs to determine whether they were significantly different from 1; the confidence intervals of the correlations, calculated as correlations $\pm 1.96 \times $ standard error of estimate, did not contain 1, so these results indicated the discriminant validity of the measurement model. The correlations for the constructs are shown in Table V. Overall, these measurement results are satisfactory and suggest that it is appropriate to proceed with the evaluation of the structural model.

4.3 Structural model

Figure 2 shows the overall explanatory power, the standardized path regression coefficients that indicate the direct influences of the predictor upon the predicted latent constructs for the
model and associated $t$-values of the paths of the research model. The model fit indices of the structural model and the cut-off value of those fit indices are presented in Table VI. The goodness-of fit statistics show that the structural model fit the data reasonably well. The three-item model produced a chi-square of 94.5 ($df = 65, \ p = 0.001$). Although the overall chi-square for this measurement model was significant ($p < 0.05$), it is well established that this statistic is sensitive to large sample sizes (Hair et al., 1998).

To alleviate the sensitivity of the chi-square statistics, the value of chi-square is commonly divided by the degrees of freedom. The re-estimated chi-square value was 1.454, and this new value is within an acceptable cut-off value range, from 1.0 to 3.0. The goodness of fit index (GFI = 0.944, with 1 indicating maximum fit), CFI (CFI = 0.923, 1 = maximum fit), TLI (TLI = 0.958, 1 = maximum fit) and the incremental fit index (IFI = 0.949) met the proposed criterion of 0.90 or higher. Finally, the RMSEA (RMSEA = 0.033, with values <0.08 indicating good fit), one of the indices best suited to the model in this study with a large sample, indicated that the structural model was a reasonable fit.

Table VI presents the results of the individual tests of the significance of the relationship among the variables. All the three relationships were found to be significant at the alpha level of 0.01. Customer orientation had a significantly positive impact on firm performance, with $\beta = 0.652, t = 5.462$ and $p = 0.000$, indicating that customer orientation was an important antecedent of hotel performance. Customer orientation also had a strong positive effect on innovativeness orientation ($\beta = 0.776, t = 6.986$ and $p = 0.000$). In fact, customer orientation plays a major role as an important antecedent of innovativeness orientation. Finally, innovativeness orientation influenced hotel performance, with $\beta = 0.840, t = 7.355$ and $p = 0.000$, indicating that innovativeness orientation was an antecedent of hotel performance (Figure 2).
Table V.

<table>
<thead>
<tr>
<th>Items</th>
<th>CR1</th>
<th>CR2</th>
<th>CR3</th>
<th>CR4</th>
<th>CR5</th>
<th>CR6</th>
<th>CR7</th>
<th>CR8</th>
<th>CR9</th>
<th>IN1</th>
<th>IN2</th>
<th>IN3</th>
<th>IN4</th>
<th>IN5</th>
<th>MP1</th>
<th>MP2</th>
<th>MP3</th>
<th>FP1</th>
<th>FP2</th>
<th>FP3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR1</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR2</td>
<td>0.356</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR3</td>
<td>0.406</td>
<td>0.371</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR4</td>
<td>0.296</td>
<td>0.395</td>
<td>0.381</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR5</td>
<td>0.424</td>
<td>0.321</td>
<td>0.415</td>
<td>0.288</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR6</td>
<td>0.387</td>
<td>0.352</td>
<td>0.347</td>
<td>0.408</td>
<td>0.402</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR7</td>
<td>0.470</td>
<td>0.403</td>
<td>0.299</td>
<td>0.420</td>
<td>0.277</td>
<td>0.266</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR8</td>
<td>0.316</td>
<td>0.342</td>
<td>0.306</td>
<td>0.275</td>
<td>0.269</td>
<td>0.244</td>
<td>0.335</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR9</td>
<td>0.421</td>
<td>0.393</td>
<td>0.288</td>
<td>0.264</td>
<td>0.273</td>
<td>0.243</td>
<td>0.411</td>
<td>0.361</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN1</td>
<td>0.478</td>
<td>0.269</td>
<td>0.255</td>
<td>0.323</td>
<td>0.332</td>
<td>0.342</td>
<td>0.329</td>
<td>0.299</td>
<td>0.327</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN2</td>
<td>0.369</td>
<td>0.297</td>
<td>0.292</td>
<td>0.347</td>
<td>0.373</td>
<td>0.310</td>
<td>0.332</td>
<td>0.368</td>
<td>0.307</td>
<td>0.201</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN3</td>
<td>0.321</td>
<td>0.317</td>
<td>0.289</td>
<td>0.276</td>
<td>0.256</td>
<td>0.176</td>
<td>0.280</td>
<td>0.280</td>
<td>0.274</td>
<td>0.173</td>
<td>0.199</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN4</td>
<td>0.301</td>
<td>0.267</td>
<td>0.374</td>
<td>0.254</td>
<td>0.315</td>
<td>0.328</td>
<td>0.347</td>
<td>0.328</td>
<td>0.355</td>
<td>0.335</td>
<td>0.310</td>
<td>0.326</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN5</td>
<td>0.264</td>
<td>0.302</td>
<td>0.341</td>
<td>0.263</td>
<td>0.286</td>
<td>0.301</td>
<td>0.386</td>
<td>0.347</td>
<td>0.343</td>
<td>0.389</td>
<td>0.352</td>
<td>0.344</td>
<td>0.325</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP1</td>
<td>0.236</td>
<td>0.313</td>
<td>0.365</td>
<td>0.387</td>
<td>0.264</td>
<td>0.397</td>
<td>0.336</td>
<td>0.362</td>
<td>0.325</td>
<td>0.317</td>
<td>0.346</td>
<td>0.310</td>
<td>0.317</td>
<td>0.346</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP2</td>
<td>0.329</td>
<td>0.356</td>
<td>0.382</td>
<td>0.415</td>
<td>0.237</td>
<td>0.386</td>
<td>0.344</td>
<td>0.341</td>
<td>0.416</td>
<td>0.328</td>
<td>0.328</td>
<td>0.300</td>
<td>0.299</td>
<td>0.388</td>
<td>0.328</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP3</td>
<td>0.362</td>
<td>0.347</td>
<td>0.267</td>
<td>0.426</td>
<td>0.276</td>
<td>0.345</td>
<td>0.382</td>
<td>0.394</td>
<td>0.423</td>
<td>0.336</td>
<td>0.344</td>
<td>0.314</td>
<td>0.276</td>
<td>0.415</td>
<td>0.364</td>
<td>0.363</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP1</td>
<td>0.314</td>
<td>0.269</td>
<td>0.294</td>
<td>0.385</td>
<td>0.234</td>
<td>0.286</td>
<td>0.377</td>
<td>0.366</td>
<td>0.285</td>
<td>0.314</td>
<td>0.325</td>
<td>0.346</td>
<td>0.416</td>
<td>0.299</td>
<td>0.381</td>
<td>0.376</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP2</td>
<td>0.323</td>
<td>0.364</td>
<td>0.224</td>
<td>0.367</td>
<td>0.325</td>
<td>0.313</td>
<td>0.338</td>
<td>0.358</td>
<td>0.367</td>
<td>0.297</td>
<td>0.388</td>
<td>0.318</td>
<td>0.379</td>
<td>0.460</td>
<td>0.341</td>
<td>0.355</td>
<td>0.338</td>
<td>0.323</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>FP3</td>
<td>0.298</td>
<td>0.328</td>
<td>0.217</td>
<td>0.425</td>
<td>0.367</td>
<td>0.200</td>
<td>0.283</td>
<td>0.405</td>
<td>0.326</td>
<td>0.288</td>
<td>0.320</td>
<td>0.299</td>
<td>0.364</td>
<td>0.376</td>
<td>0.300</td>
<td>0.364</td>
<td>0.349</td>
<td>0.311</td>
<td>0.347</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Notes: All the correlations are significant at the 0.01 level; CR: customer orientation, IN: innovativeness; MP: marketing performance; FP: financial performance.
5. Conclusion and implications

The purpose of this study was to investigate the effects of innovation and customer-oriented value systems on performance in the context of the hotel industry. The results indicated that customer orientation is significantly associated with innovativeness and hotel performance. Furthermore, innovativeness was positively associated with hotel performance. To the best of the authors’ knowledge, this research is the first attempt to explore the relationship among innovativeness, customer orientation value systems and firm performance in the context of the hotel industry. This research is a contribution to the innovation literature, particularly in the context of the hotel industry.
hospitality industry. It is also found that there is a research gap in innovation literature for the hospitality industry, particularly in Isfahan, Iran, which is a top tourism and hospitality destination in the world. The research provides hotels with the knowledge required to more effectively serve customers. As the service economy grows, competition among hospitality firms intensifies, and to ensure service excellence, hospitality firms need to provide customers with innovative services which in turn lead to higher levels of performance.

The findings of this study have provided hotel managers with insights and practical implications. First, to encourage innovativeness orientation, hotel managers may need to extend their reach to the activation triggers that prompt organizational utilization of external knowledge rather than simply expanding opportunities for acquisition. This is challenging because the policy tools available are limited and there are few, if any, precedents. It suggests that a high degree of policy imagination is required, preceded by appropriate research. Policy interventions to support social integration within organizations, perhaps arising from training or knowledge exchange activities, would also require strategies to engage hotels. Second, the importance of a “long-term orientation” is evident, as well as the need to empower employees to making innovative decisions. It thus suggests that hotels should use other, non-financial performance measures such as customer satisfaction and retention. Furthermore, the understanding about what customers want and do not want can result in greater efficiency; a reduction of waste; and enhanced, competitive advantages. Third, innovations in the hospitality industries follow a trajectory of service innovation modes, differing from a product/service innovation. Such innovations have increased operational efficiency and have created more value for customers. As a result of continuous innovation, hospitality firms have improved the quality of their service and offer a more customized experience. This is accomplished by predicting customer needs and wants, increasing loyalty through various programs, expanding customer base while reducing unused capacities and increasing efficiency and productivity. Fourth, innovations come with barriers including the ownership structure of the hospitality industry and franchise models. Innovation is still a buzzword for many hotels, and the hospitality industry has been slow in adopting new technologies. The cost of innovation, resistance from owners, resistance to change, training issues, pace of advances in new technology and time and budget constraints are some of the other barriers.

This study inevitably suffers from limitations. The sample size enables robust statistical analysis but cautions against exaggerated claims. Replication would increase the confidence with which observations might be made and perhaps enable more finely grained analysis, notably taking into account contrasting ownership arrangements. A comparative study on other hospitality firms would enable greater scrutiny of the theoretical observations made here and lead to more easily generalizable findings. The implications for future research of the foregoing analysis are twofold. Firstly, a similar survey should be undertaken using the items identified above. Such studies would ideally encompass several service sectors. That way, temporal, spatial and sectoral comparisons could be made relative to the absorptive capacity. This would result in more meaningful discussions of the levels of absorptive capacity than is possible at the moment. Secondly, undertaking detailed qualitative case studies examining the complexity of the processes for being innovative is advocated. Following such research, it may be possible to retheorize more fully the element of absorptive capacity and devise a mechanism for its measurement.
References


Further reading

Corresponding author
Mohammad Reza Jalilvand can be contacted at: rezajalilvand@ut.ac.ir

For instructions on how to order reprints of this article, please visit our website: www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com
Business innovation in Indian
gsoftware industries

Dileep Baragde
Department of Research, GS Moze Senior College, Pune, India, and
Neeta Baporikar
HP-GSB, Namibia University of Science and Technology, Windhoek, Namibia

Abstract

Purpose – Business innovation should enable the achievement of goals across the entire organization. To
compete well, business innovations become important and crucial and more so for software industries. With
prevalent trends of big data, cloud and cyber security, there are exciting days ahead. Opportunities and
innovations are being predicted and by iterations, they can be projected.

Design/methodology/approach – The ways in which businesses innovate and implement new ideas are
changing. Historically, innovation has commonly been practiced using a “closed innovation” model,
particularly with regard to new technology and research and development. It adopts disruptive technologies
like big data, cloud computing, cyber securities, etc., and new models of engagements. It sectors business
turnaround in sentiment and upbeat mood.

Findings – This paper has looked at the business innovation in Indian software industries’ success in the
global information technology industry from a new perspective. India’s software services industry has helped
develop a huge talent pool that can write the most complex software. Sales and distribution is no longer a
problem because the internet allows you to serve a global market.

Originality/value – This paper, by adopting an analytical and descriptive research method, aims to
explore and understand business innovation in software industries. The two studied cases reflect and help to
discern how the firms are developing capabilities and reflect how they have evolved over a period, primarily
through business and incremental innovations. The advantage of focusing on software products first is that
unlike many other product categories, the upfront investments are much more manageable, and we already
have the talent base and skills to get going.

Keywords Innovation, Case study, Indian IT sector, Software technology

Introduction

The word “innovation” refers to “something freshly introduced”. Innovation is about putting
in ideas to make new results. This result may be a new product, a new approach or even a
new application of an old product or approach. Innovation emerges due to new competitive
demands. Radical technology shifts have forced industries to open out the creative routines
involving their competitive partners. This new development works well for a country like
India that can participate at the creative level. Indian industries are crucial players in
globally dispersed networked innovation (Charted Accountants of Australia, 2015). India is
a land of technologists, and businesses can survive much longer in India than in any other
country (Narendra, 2009). Indian technology firms add value to the country’s growth because
a technology product company adds faster and quicker money using few resources. The
main challenge is that these firms need to be futuristically competitive (Saramanamitra,
2007).

Scientific and technological breakthroughs are vital for progress. As the key axiom of
Joseph Schumpeter’s work suggests, innovation as the “perennial gale of creative destruction
of ideas and structures” is a natural and necessary process for economic growth (Rosenberg, 1994). This is evident in the growth experiences of most developed and emerging economies of the world, including India. However, India’s performance in science, technology and innovations, during the past 50 years of economic planning followed by liberalization and reforms, has been singularly uneven. India occupies a significant global space in high-end product and service innovations in the “new economy” sectors of information and communication technologies (ICTs), pharmaceuticals and skill-intensive manufacturing (World Bank, 2007). With 7-8 per cent annual average growth rate during the past decade, India’s growth story is being re-written by innovations. India’s innovation potential is grossly underutilized and has largely bypassed its young population, often living in abject poverty and equipped with low skill sets (World Bank, 2007). The current innovation scenario has an urban bias with exclusive focus on segments catering to the elite population and export markets. Yet, innovation networks are increasingly being used in ICT for client-tailored innovation services – to design custom chips and supply chain software algorithms. This brings in a new class of services “product engineering services”. Chesbrough (2003) has termed this as an “open innovation” model; a new paradigm of innovation where the firm will not carry the baton of innovation all by itself. As Ernest (2005, p. 72) observes, even big firms like IBM are in no position to “mobilise all the diverse resources, capabilities and bodies of knowledge internally”. Nath and Hazra (2002) have used the widely acknowledged software development process by the Waterfall model proposed by Royce in 1972 to understand the software market. The Waterfall model proposes a strict order that is followed in software development: moving from concept, through design, implementation, testing and installation, troubleshooting to the last phase of testing and maintenance. In this model, the complexity of the task, the innovation involved also follows this order, moving from highest to insignificant at the last stage. They posit that later stages, which are non-creative routine segments, are the visible part of the market. The other phases, which constitute the inaccessible high-investment/high-risk and high-skill activities, are part of a firm’s growth strategy and are developed in-house. We argue that the new concepts “open innovation” and “globalisation of innovation” that have emerged due to new competitive demands and radical technology shifts have forced firms to open out the creative routines involving even their competitive partners. Moreover, a plethora of actors and stakeholders are seen to be driving innovations in the software industry for sustainability in India, as depicted below in Figure 1.

Figure 1. Plethora of innovation drivers
Literature review

The business model of majority of the Indian software firms is mainly confined to the vertical integration “at lower end of the value chain” with major multinational corporations. Influential writings (DCosta, 2003, Kattunam and Iyer, 2001) point to the low-end manpower-intensive services provided by majority of the firms. Arora et al. (2001) observed that although the software sector is human capital-intensive, the Indian software industry does not require exceptional skills beyond academic training at the first-degree level. Yet, information technology (IT) innovation signifies the use of technology in new ways to increase company efficiently to accomplish core business aims and initiatives. Innovation often begins with idea creativity or generation, wherein ideas are narrowed down, revised and then devised and considered for their business viability, feasibility and desirability.

Present economy is IT-based net economy, with IT and software industries dominating the business world. There is a drastic change from the industrial economy, where it was all about excluding competition (Rifkin, 2001, p. 17). To compete well, business innovations become important and crucial. Especially for software industries, which are technology-dominated by several prevalent trends such as big data, cloud and cyber security, there are exciting days ahead. Opportunities and innovations are predicted and by iterations, they are projected. This is significant, as some of the choices for businesses which desire to inspire and fund innovation through their organizations are multi-fold. These are discussed as considerate business innovation opportunities, enabling development of a business culture that supports business innovation, working collaboratively; managing risk, rational property protection and accessing finance and upcoming challenges and opportunities are explored by adopting an analytical and descriptive type of research method. Cases (Yin, 2003) help in understanding and comprehending the whole situation in a better perspective. The two cases which form part of this paper help to reflect and help to discern how the firms are developing capabilities. The two firms show that they have evolved over a period, moving from simple to composite operations primarily through incremental innovations. One of the driving forces for a change towards a new equilibrium is formed by innovation, which means a breakthrough of existing patterns of production and productivity. Innovation is thus a creative “modus operandi” of an entrepreneur and induces a process of economic growth. Clearly, flexibility and vitality of the economic system is a sine qua non for an adjustment after a disturbance in the original equilibrium position. Since the 1980s, economic research has witnessed an avalanche of interest in innovative behaviour of firms, in particular in the context of regional competitive conditions (Bertuglia et al., 1998). The Indian IT-ITES industry has arisen as one of the most vibrant sectors in India’s economic development. It is responsible for the global recognition of India as a “soft” power. It is fuelling India’s economy (Report of IT and ITES, 2014).

Business innovation enables the achievement of goals across the entire organization (Baporikar, 2014). Further, innovation helps organizations to grow. Growth, though measured in turnover and profit, can also occur in knowledge, experience, efficiency and quality. Innovation is the process of making changes, and can be radical or incremental, applied to products, processes or services (Baporikar, 2015a). Business innovation is not only just about the generation of new ideas but also about execution: bringing an idea to market, making a change or doing something in a new way that generates benefits and value for the business. It is also the element of implementation that distinguishes innovation from knowledge and invention. The functional goal of the innovation ecosystem is to enable technology development and innovation. According to the Global Innovation Index (WIPO, 2014), India ranks 76th among the 143 countries surveyed, having fallen 10 positions since the last report and having fallen relative to other BRIC economies (tinyurl.com/lgu9ho).
smaller slide of one position down the rankings of the Global Competitive Index leaves India in the 60th position among 148 countries (Schwab, 2013). As per OECD (2007), the Government of India declared 2010-2020 as the “Decade of Innovation”, for which the roadmap would be prepared by the newly established National Innovation Council (NInC; innovationcouncil.gov.in). The NInC is “the first step in creating a crosscutting system which will provide mutually reinforcing policies, recommendations and methodologies to implement and boost innovation performance in the country” (National Innovation Council, 2010). The Science, Technology and Innovation Policy 2013 outlines the major policy initiatives to strengthen the innovation ecosystem and give a boost to the development of innovation.

Western countries have been investigating innovation in attempts to understand and hence enhance the likelihood of increasing innovation (OECD, 1999a, 1999b, 2000 and 2001). The contributions of organizational innovation to organizational performance are of long-standing interest (Burns, and Stalker, 1961, 1994 and Drucker, 1992) and in corporate arenas (Little, 2001; Tidd et al., 1997 and Hamel, 2000). Goh (2005) said that to bring about innovation, organizations should support knowledge-centred principles to make an efficient role for knowledge creation for innovation. Leifer and Rice (2001) searched out the role and importance of different hubs to bring about radical innovation in mature firms. They proposed different ways to manage radical innovation projects. Innovation has been variously defined and can be examined from a variety of perspectives, from a broad definition such as “innovation refers to the process of bringing any new, problem solving idea into use” (Kanter, 1983), to a more outcome-based approach, where “innovation is the process whereby new ideas are transformed, through economic activity, into sustainable value-creating outcomes” (Livingstone, 2000).

Innovation is used to describe new products, processes and services undertaken by firms which lead to an increase in performance. The notion here is of a change which leads to a commercial process. Similarly, organizational innovation is defined as the adoption of an idea or behaviour that is new to the organization, where “the innovation can be a new product, a new service, a new technology or a new administrative practice” (Hage, 1999). Innovation underpins the growth and dynamism of all economies. In many OECD countries, firms now invest as much in the knowledge-based assets that drive innovation, such as software, databases and research and development (R&D). Moreover, billions of people around the world, including in emerging economies, today have access to the internet and are connected to one another, enabling knowledge diffusion and the creation of further innovations (OECD, 2015a). The changing nature of the market, the challenge of ongoing change and the emergence of the knowledge society have led to an increased focus on innovation. Innovation is required because we cannot expect that the accumulated competence, skills, knowledge, product services and structure of the present will continue to be adequate (Drucker, 1992). Innovation implies improving on existing products and processes, finding new ways and also abandoning the old or reviewing every product, service, technology, market and distribution channel on a regular basis (Drucker, 1992). Much of the research on innovation in firms has come from studies of R&D or technological changes. Innovation is essentially a creative activity and requires freedom of thought and action. To accommodate this, a formal KM framework must be established to channel the activities into corporate assets (Baporikar, 2015b).

Hence, innovation is a spectrum of activities. It extends from R&D, new product and service development, the introduction of improved organizational activities to other activities such as market research. The amount of innovation can range from radical new ideas that transform a market or an industry, to incremental variations that build on existing
products or processes. Innovation is a powerful transformative force. There is no one-size-fits-all model for innovation in business. Although the common definition of innovation appears simple, the introduction of a new idea, method or device, a more precise definition (and comprehensive understanding of how organizations apply the term in practice) will keep frivolous uses of the term from clouding judgment (Baporikar, 2014). What is more, innovation is a significant component of business operations. It can provide cost advantages through process innovations, as well as intellectual property and opportunities for product differentiation and improvement. It drives new product development and improvements in business efficiency, and these in turn can generate increases in trade and productivity. Innovative businesses can benefit from being first to the market with new products and/or services, allowing them to establish market share and customer loyalty. Software has been defined as instructions and data structures (computer programs) that when executed on a machine provide the desired function and performance along with documents that describe the operation and the use of programs. The essence of the software entity has been described by Books in his classic “The Mythical Man-Month” as complexity, conformity, changeability and invisibility that make it inherently difficult to build. Further, unlike hardware, software does not “wear-out”, rather it evolves by addition of new functionality. Software innovation is a very useful and successful creation of change by (new) ideas. Combining the above, software innovation has to be successful creation of change by new ideas in developing computer instructions, data structures and associated documents. This should include how to develop software, how to evaluate software and also what software to develop to achieve the desired functionality and performance to meet a need or set of needs. With this background, the core objective of this paper is to study the business innovation in Indian software industries. To address the objective of this study, two approaches were undertaken. The first approach involved an in-depth literature review and a broad secondary data-based analysis of software firms, and the second approach involved a case study of two software firms.

The paper also looks dominating technologies big data, cloud and cyber security are with exciting opportunities, innovations of software industries in the current scenario. Business innovation in software industries not only invent new idea or product but also the process or services providing a freshly. Today’s businesses essentially achieve goals in shorter innovation cycles and less time. They are able to swiftly adapt to changing market conditions and capitalize on business innovation, and thus are in the best position to succeed.

Case studies of business innovation in software industries

Case 1: Infosys Edge™ Limited

Infosys Edge™ Limited was recognized as a representative of the IT firms. The product of Infosys Limited is Infosys Edge Business Platforms. The innovative imperative of Infosys is business value for enterprises by helping accelerate growth, maximizing profitability and driving asset efficiency. It helps businesses better respond to market opportunities created by global trends like the rise of digital consumers, the drive for smarter organizations and the growing potential of emerging economies. Infosys Edge was designed from ground up to help provide enterprises with business solutions to their recurring business problems. All Infosys Edge platforms leverage the latest technological advancements in cloud computing, mobility, big data, social media, machine-to-machine language and advanced data analytics to design solutions that accelerate innovation for businesses. Infosys Edge helps customers to deliver innovation-led growth, maximize profitability and drive asset efficiency by helping respond to market opportunities created by global trends like the rise of digital consumers, the drive for smarter organizations and the growing potential of emerging
economies. The different departments of Infosys Edge Limited, such as Commerce, HR, Procure, Talent, etc., will help in the growth of the firm. Infosys Edge empowers companies to harness the power of social media to deepen relationships, foster innovation, enhance consumer experience and increase revenues. Infosys Commerce Edge™ provides an end-to-end platform that empowers enterprises to maximize sales, deliver a superior customer experience across channels and lower costs of customer engagement. Platforms for smarter organizations power efficiencies and impact the bottom line of organizations. Infosys Talent Edge™ addresses the entire HR life cycle, helping companies streamline their HR processes and reduce operational costs by up to 30 per cent. Infosys Procure Edge™ helps global enterprises move their procurement function to the next level by enabling them to realize rapid and sustainable spend savings while providing transformational business benefits across the source-to-pay life cycle. Platforms for emerging economies leverage Infosys expertise from developed economies and apply them to the principles of emerging economies. Infosys Wallet Edge™ helps enterprises to open new revenue opportunities, foster customer loyalty and expand rapidly into untapped markets by enabling comprehensive mobile commerce and payments for telcos, banks, retailers and enterprises, e.g. Airtel, India’s largest mobile operator offering mobile wallet services.

Case 2: Phoenix IT Solution Limited
Phoenix IT Solution Limited products include mPower RPS™ on cloud. mPower Revenue Protection System (RPS) on cloud is an innovative solution to streamline the metering, billing and collection processes of utilities analyse the MBC data to throw exceptions. mPower RPS relies on big data analysis and exception algorithms to generate exceptions and convert them into workflow tasks. Force exception resolution through dynamic workflows. Exception tasks are handled through pre-defined rule-based workflows. Workflows are dynamic to initiate sub-processes or tasks similar to case management. Each step in the workflow has pre-defined SLAs to ensure timely completion. It Benefits to Customers: Increase Revenues and Cash Flows. IT Enabled Process Automation to raise compliance levels, Higher Accountability and Transparency, Standardization of Business Processes, Increase Revenues and Cash Flows, IT Enabled Process Automation to raise compliance levels, Higher Accountability and Transparency, Standardization of Business Processes. Interestingly, mPower RPS covers all three segments, viz., analytics, mobile computing and cloud computing, along with business process management. mPower RPS is a unique offering that has the potential to be considered by even the most IT-savvy utilities that have advanced systems in place, down to small or micro utilities that have rudimentary or no automation at all. The solution being cloud-based, utilities are free from making huge infrastructural investments. Further, the solution can be extended to other utilities like gas and water just by quickly configuring it to meet their business processes. Our partnership with IBM to offer mPower RPS on IBM Smart Cloud and also as a System-In-A-Box using IBM Pure Systems ensures easy acceptance of our solution across the world, especially by public utilities.

Understanding business innovation in Indian software industries
In 2014, the IT sector recovered the industries from slowdown. It sustained the industry growth in double digits. It adopted disruptive technologies like big data, cloud computing, cyber securities, etc., and new models of engagements. The IT sector witnessed business turnaround in sentiment and upbeat mood. The IT industry’s perception turned positive overseas in the past three years. Today’s IT sector focuses on re-structuring to keep pace with new technologies and demands. It makes sound growth in software exports, poised to touch $100bn in 2014-2015. The government also Braces for Digital India program and Make
Big data requires big investment in infrastructure and skills. Big data as a concept is ever-evolving, as the capacity to mine structured, semi-structured and unstructured data increases. In 2014, organizations were making more informed business decisions and becoming more intelligent as they interacted with their customers. As knowledge is considered as a catalyst of innovation, we believe that a knowledge-enabled system could be of a great value to support and leverage the innovation process, which is currently rarely automated and very often not clearly defined (Baporikar, 2015a). For example, more sophisticated “recommendation engines” anticipating users’ interests more accurately for services such as Netflix, Amazon and Google. Further, credit reference agencies have been using big data to inform on lending decisions by developing the algorithms used to generate credit ratings. Retail, logistics and budget planning have all seen significant advancement last year due to greater business intelligence.

Cloud computing ushers a new paradigm in IT sourcing and services delivery. It is essentially a computing model in which dynamically scalable, virtualized information services are delivered on-demand, over the network in a pay-per-use model. It is likely to unleash new growth opportunities for the Indian IT industry and also bring innovation in the way IT solutions and services are delivered. There is immense opportunity for the government and the industry to become partners, to drive adoption of cloud in India and also grow India into a hub for delivering cloud services. As per a study conducted by IDC and commissioned by Microsoft, cloud computing will generate two million jobs in India. These jobs, according to the survey, will be created in the manufacturing and “communications and media” sectors. An additional 1.4 million jobs are set to be created in the banking sector. A study conducted by NASSCOM and Deloitte last year predicted market to clock revenues of $16 billion by 2020. 2014 was another big year for cloud computing. The reasons behind the movement to cloud-based operations are numerous, from IT agility to IT innovation and employee collaboration; cloud computing is becoming the hub for operational infrastructure. Big data, generated through the Internet of Things, is an important driver for organizations to move to the cloud. This year, there will be greater adoption of cloud and in-house/cloud hybrid-hosted operations among businesses (NASSCOM, 2015).

Cyber security is a multi-dimensional concept, a complex issue straddling many disciplines and fields. Nations have to take appropriate steps in their respective jurisdictions to create necessary laws; promote the implementation of reasonable security practices, incident management and information-sharing mechanisms; and continuously educate both corporate and home users about cyber security. It is a global problem that has to be addressed by all governments jointly. India’s dependence on technology as a nation is increasing – the Indian economy is going the e-way. Growth in e-commerce, e-payments, card circulation and domestic IT market spending and internet user base are the leading indicators. The government is relying on technology to solve governance and socio-economic problems. Technology has become the lifeline of critical infrastructures such as energy, telecommunication, banking, stock exchanges, etc. Defence and police agencies are making strategic use of technology to modernize. As a nation, we are as much a victim of cyber-attacks as any other country. The attackers are local and global – driven by different motives. Attacks on critical infrastructure can have crippling effects with outcomes similar to those achieved by traditional war.

Clearly, cyber security is linked to national security (NASSCOM, 2015). The cyber security industry must invest in skilled talent. 2014 is now being dubbed “the year of the breach”, and it is not difficult to see why. Last year, sensitive data were being leaked at Google, Apple and, most recently, Sony, to name but a few leading tech giants. Security weaknesses have been marked down to a number of key areas, such as configuration...
issues, third-party providers, lack of network diversity and, most worrying of all, lack of qualified security talent. The cyber security skills gap is perhaps the underlying issue behind the “the year of the breach”, having a knock-on effect on the industry and the economy. Cyber security skills are a global priority but, with a lack of consistency in accepted career definitions, organizations are experiencing difficulties in attracting new talent and progressing existing professionals. To offset the skills deficit, talent from the “gaming” industry are being brought into the security sphere and their skills adapted for this arena.

Thus, from now onwards, the information security industry has an opportunity to re-define itself and build on the negative global coverage it observed last year to attract new talent. Investment, employment branding and clearly defined career paths are essential if organizations are to reduce the deficit in the skills gap and avoid seeing their own brand in the papers due to the latest leak. As we look forward to the year ahead, there are many fantastic opportunities in IT to look forward to – from the existing trends of 2014 to the emerging technologies yet to be discussed. The IT industry is growing at an exponential rate, with demand, investment and technological capability being the three pillars of support driving the sustainability in growth. However, the barriers to the industry are clear and present dangers. The shortage in skills and capable talent or realizing the expectations for these pressing technologies must be addressed on an educational, cultural and organizational level. IT industries’ landscape of new digital tools and techniques for open innovation falls into four specific buckets. These are platforms, communities, methods and supporting functions. New networked technologies, particularly ones based on social media, have enriched the reach of innovation programmes. While open innovation is possible without these tools, they can considerably reduce cost but increase scale and scope. The business functions are product development, software development, business development, marketing, sales and fund raising. That is because each business function has a unique set of innovation concerns that often requires either special supporting platforms and/or particular communities that must be cultivated or tapped into. The second is the specific collaborative method to create the targeted innovation. Although IT can help lead business in to open innovation, it must make sure the platforms, communities and methods are supported by a robust set of business functions to protect the organization while enabling rapid co-creation. Even though innovation is not necessarily a core competency of the IT department, technology certainly is. As successful innovation becomes more dependent on the effective use of the latest social software and online communities, this might be an area where IT can lead the business effectively for the long-term, by providing a proven palette of tools, technologies and supporting functions to make the business successful, with open innovation as a standard part of the next generation of service delivery.

Discussion and implications

Technology growth and economic development

Technology growth is one of the largest sources of modern economic growth. Companies from all over the world have succeeded in creating emerging economies with these new models and are now competing with established multinational corporations (Zhao et al., 2015). It is a common misconception that innovation refers only to R&D and technology. Innovation can be described through a variety of different lenses – application (product, service, process, paradigm or business concept), level (incremental, substantial or radical), target (consumer, business or procedure), etc. (Baporikar, 2015a).
Sustaining innovation is the implementation of new or significantly improved products, processes, marketing or organizational methods. This includes improvements to all types of operational processes within a business, such as production lines, financial systems or human resource management, as well as business model innovation, i.e. structural changes, new strategic partnerships or financial models. Innovation may allow existing markets to evolve with better value, allowing firms to compete against and build upon each other’s improvements. Sustaining innovation does not disrupt existing markets. While sustaining innovations are typically innovations in technology, disruptive innovations can have far-reaching cost for existing markets (Charted Accountants of Australia, 2014).

Disruptive innovation explains the process by which a new product or service transforms an existing market or sector by increasing the simplicity, convenience, accessibility and/or affordability of products and/or services, thereby irrevocably changing the status quo in the market. Examples include:

- the mass-produced automobile;
- personal computers disrupting the mainframe and minicomputer market; and
- mobile phones disrupting fixed-line telephony.

The principles of disruptive innovation can be applied across all sectors. The increasing availability of online learning and access to online courses is another example. Disruption can be a positive force, transforming sectors to make products affordable and convenient, thereby making them available to a much larger population. Such innovations challenge the conventional market through the creation of new markets. New ideas and processes also have different degrees of novelty and risk associated with implementation. The scale of change, novelty and risk classifies innovation into two main categories:

1. **Radical** (Charted Accountants of Australia, 2015): This category leads to fundamental changes in processes or products. This type of innovation usually involves new technology, high risk or uncertainty and a focus on processes, products or services that are untried or untested.

2. **Incremental** (Charted Accountants of Australia, 2014): This category involves smaller-scale adaptations of existing products or processes. Innovations of this type usually involve existing technology and low risk or uncertainty. They focus on improvements to existing processes, products or services and improve the business competitiveness within established markets or industries. Radical innovation is less common than incremental innovation.

**Business innovation techniques**

The ways in which businesses innovate and implement new ideas keep changing. Historically, innovation has commonly been practiced using a “closed innovation” model, particularly with regard to a new technology and R&D. In recent decades, there has been a shift towards a more open model that encompasses increased collaboration and partnerships (Charted Accountants of Australia, 2015). Hence, organizational innovation and IT governance need to develop a methodological framework that supports new approaches of technological innovation by companies (Zhao et al., 2015). However, it is not well suited to all types of innovative activity or to the twenty-first-century global landscape, where information, staff and capital are much more mobile and adaptable. There are costs and benefits associated with both models. The closed model avoids complications that can arise from working collaboratively with external partners, as business relationships may be affected by changing aims, unequal bargaining power and cultural or organizational
incompatibilities between the parties. The open model can create greater efficiencies and realize opportunities that may be missed in a closed model.

A firm might invest a large amount of money in an idea before it realizes that the innovation is not a good fit for its business. Under the closed model, that idea might just be put on the shelf. Open innovation approaches could see the firm establish a partnership or license its intellectual property to another party to further develop and commercialize the idea. The open model can provide a greater scope for business growth because its innovative potential is not limited to the capacity of its internal resources. The open model can also increase the scale and scope of a business’ activities, allow for costs and risks to be shared and improve the business’ ability to deal with increasingly complex business environments.

According to Baporikar (2015a), different technologies can be used to support the various phases of the innovation process, but very few are fully integrated and provide the features necessary to support the new managerial approaches and models of innovation. The Indian software industry in turn has become successful in making a mark in the global arena. This industry has been instrumental in driving the economy of the nation on to a rapid growth curve. The export of software has gone up, which has been instrumental in the huge success of the Indian software companies and the industry. The domestic software market largely depends on sale of software packages and products, which constitute a major part of revenues.

**Policy and business implications**

The ability of a company to transform itself is imperative for sustaining a competitive advantage in today’s market. Innovation has a crucial role in achieving competitive advantage especially in this globalized world (Baporikar, 2014). Businesses today need to achieve shorter innovation cycles in faster time. They need to perform while their prices and margins are under pressure. Those that are able to swiftly adapt to changing market conditions and capitalize on innovation to drive business are in the best position to succeed. Transformation is listening to what the moment calls for and being able to rethink business on the fly. Transforming profitably requires more than incremental change. Organizations that rethink their business operations as quickly as the rate of change in the marketplace are able to implement new business models built to embrace innovation and maximize profitability. The goal is not only to get ahead of the curve, but to stay ahead. Many companies have made sweeping, sustainable changes, breaking open new markets and greatly impacting their bottom line by being innovative. Amazon.com, which started as an online bookseller, became a premier online retailer. iTunes grew from an online music vendor to a prominent consumer brand and entertainment services provider. These companies carefully plan and execute innovation. Transformation is about imagining the possibilities, then making them happen. It is about not being inhibited by technology. It is about adopting new technologies with fewer challenges and greater profitability. The technology is here to drive that kind of transformation.

Business transformation can be done through technology innovation. For over 40 years, SAP software innovations have transformed businesses. Our latest generation of technology allows companies to make better and faster decisions and reach previously unachievable targets. Enable the Real-Time Enterprise Integrated real-time analytic, predictive and in-memory database solutions from SAP help companies to improve the business value of information and processes to enable more profitable and sustainable business outcomes. Embrace the Connected World Leverage the power of information contained in Big Data to gain a better understanding of market conditions, make timely predictions and achieve deeper insight to build an information-driven business in this connected world. Empower the
Mobile Individual. Today’s most successful companies place a premium on one-to-one customer engagement. Integrated market-leading mobile platform and device management technologies allow companies to transform how they engage customers, partners and employees. SAP solutions enable companies to leverage technology and embrace innovation to become more agile, achieve successful business transformation and run like never before priorities for best-run companies. Best-run companies carefully plan and execute innovation; it does not happen by chance. Technology solutions from SAP place the power of innovation within reach. A broad array of innovations help companies drive real change for their organizations. Such innovations enable focus on the following key business priorities to help companies capture market share, increase customer satisfaction and sustain a competitive position: big data, real-time enterprise, real-time analytics, enterprise mobility, enterprise information management, cloud solutions and application integration.

Conclusion
In the Indian software industry, which is mainly service-driven, inventiveness is monetized in work done for clients, not as an income source in its own right. Thus, it is difficult to assess the innovativeness that is taking place. In other words, innovations are mainly in processes rather than in products. Keeping this problem in consideration, innovation was defined in a broader context so that it would be possible to capture innovation in its various facets: process innovations, incremental innovations, non-technological innovations that are generally neglected but play an equally important role as product innovation or radical innovations. This paper has looked at the business innovation in Indian software industries’ success in the global IT industry from a new perspective. Software industries have shown they have potential to be global leaders like Google in mobile advertising and Fusion Charts for visualization tools. India’s software services industry has helped develop a huge talent pool that can write the most complex software. Sales and distribution is no longer a problem because the internet allows you to serve a global market. The missing link to creating the next Facebook or Google from India is a supportive ecosystem that promotes rapid growth. Well-designed software products that combine the special needs of Indian customers with the right technology have the potential to transform the productivity of India’s large micro, small and medium enterprises sector across industries. Success in software products could help promote product thinking in other industries as well. The advantage of focusing on software products first is that unlike many other product categories, the upfront investments are much more manageable, and we already have the talent base and skills to get going. Further, the discussion also reflects that some firms exhibited significant movement from simple to complex services, and created novel service processes/products. Firms do take different paths to develop their expertise. The M&A and strategic technology alliances have mainly been used by the firms to absorb new technologies from their partners or to jointly develop new innovative capabilities. This is in conformity with Kogut (1991) and Auster (1992) that learning through alliances complements endogenous learning to creates new competencies. Case studies provide more details of how these strategies are useful, but it is also true what Hagedorn and Schakenradd (1994) say, “the extent to which such strategies are successful is not always clear”. To conclude, it is imperative for India to unleash the innovation potential to create business transformation and sustainable development pathways for the future.

Note
1. The cases that form part of the paper are based on secondary and published data.
References


Further reading


Ministry of Science and Technology (2013), Science, Technology and Innovation Policy, Government of India, Delhi.


NKC (2007), Innovation in India, National Knowledge Commission, Govt. of India, New Delhi.


Corresponding author
Dileep Baragde can be contacted at: baragde.dileep@gmail.com
The Kenyan Judiciary’s Open Government Initiative: prospects and challenges

Elsebah Maseh
Moi University, School of Information Sciences, Eldoret, Kenya and InterPARES Africa Team, Department of Information Science, University of South Africa, Pretoria, South Africa, and

Shadrack Katuu
International Atomic Energy Agency, Vienna, Austria and Department of Information Science, University of South Africa, Pretoria, South Africa

Abstract

Purpose – This paper is based on an empirical study undertaken between April 2014 to December 2014 that aims to investigate the Open Government Initiative in the Kenyan Judiciary and its contribution to Judiciary transformation for enhanced justice delivery.

Design/methodology/approach – The paper draws from both literature and data collected from representative professionals in the Kenyan Judiciary through interviews and questionnaires.

Findings – The findings indicated that the Kenyan Judiciary was at its initial stages of implementing its Open Government Initiative, and several strategies for the implementation were identified. Further, the findings revealed the benefits of opening up the Judiciary for public participation which pointed toward an improved justice delivery.

Originality/value – This paper presents findings of the investigation of Open Government Initiative in the Kenyan Judiciary as a contributory factor to the then on-going Judiciary transformation aimed at enhanced justice delivery. The paper provides a nexus between open government and records management and demonstrates the importance of sound records management for successful Open Government Initiative.

Keywords Kenya, Records management, Judiciary transformation, Open government, the Judiciary

Paper type Case study

1. Introduction

Over the past three to four decades, there have been varied discussions on open government. Sandoval-Almazan (2015, p. 10) has defined open government as a:

[...] technological institutional platform that turns governmental data into open data to allow their use, protection and collaboration by the citizens in processes of public decision making, accountability and improvement of public services.

Open government has its origin in the proclamation of the Freedom of Information (FOI) legislations which were the first to recognize a citizen’s right to access information held by a

The authors wish to thank the editor and anonymous reviewers of this journal for their constructive comments to improve the paper. With regards to Shadrack Katuu, the views expressed herein are those of the author and should not be attributed to his current employer, the International Atomic Energy, nor any of his previous employers.
public agency (Sandoval-Almazán, 2015; Wamukoya, 2012). The world’s first FOI legislation was enacted in Sweden in 1766, followed by similar laws in Finland in 1951 and the USA in 1966 (Sandoval-Almazán, 2015; Yu and Robinson, 2012). Currently, about 100 countries have enacted these laws including a few African countries such as South Africa, Liberia, Niger, Nigeria, Zimbabwe, Angola, Guinea Conakry, Ethiopia, Uganda and Tanzania (Katuu, 2005; UNESCO, 2013). The operationalization of the FOI Laws varied from country to country, but most countries operate under either of the two principles of reactive and proactive transparency, and under both principles, information about government operations that are relevant to the interests of the citizens is availed to the public (Trapnell and Lemieux, 2015; Wamukoya, 2012).

Following the promulgation of the FOI Laws, the term open government was used primarily as a synonym for public access to previously undisclosed government information (Yu and Robinson, 2012). When Congress in the USA amended the FOI Legislation in 1974, it noted that open government had been recognized as the best insurance that government business was being conducted in the public interest. Consequently, as FOI and related statutes developed through 1970s and 1980s, the federal court in the USA began to use the term open government and started referring to governmental transparency (Sandoval-Almazán, 2015).

Open government is hinged on three essential pillars, namely, transparency, participation and collaboration. Gavelin et al. (2009) contend that the open government agenda has gained momentum over the past decade because of the recognition that openness benefits not only the citizens but also the government. Further, Trapnell and Lemieux (2015) identified the following as factors that have contributed to increased need for openness among governments and agencies: a desire for more efficient service delivery; growing demands for participatory governance; globalization; and the increased use of information and communication technologies (ICTs). Governments are therefore coming under increasing pressure to become more accessible to the citizens and also open up their operations to public scrutiny (Katuu, 2002; OECD, 2005). An open government’s purpose is to hear users so that they can play an active part in the release and use of government data (Sandoval-Almazán, 2015).

This paper explores the concept of open government in the context of Kenya’s Judiciary and the transformation efforts therein. Specifically, it explores the strategies used by the Kenyan Judiciary to open up to the public; examines the prospects and challenges of opening up to the public; and establishes a nexus between openness and transformation in the Kenyan Judiciary. The paper begins with a review of the literature that formed a conceptual basis for the research approach undertaken including the development of a data collection process. The paper provides key findings from the analysis of data collected and concludes with closing remarks.

2. Literature review
This section explores three related concepts that inform the paper. It begins with an outline of the Kenyan Judiciary tracing the legislative reforms that have taken place since the promulgation of the most recent constitution. It maps discussions related to open government including a description of developments in different parts of the world. The paper uses the maturity model concept to assess the effect of open government in Kenya. Therefore, the last part is a brief introduction to maturity models.

2.1 Kenya’s Judiciary and its reforms
The Judiciary is an important institution for promoting the rule of law in any country and creates a conducive environment for economic, political and social transformation (Ojielo, 2010). The Kenyan Judiciary ensures that the government governs within the rule of law, so that both domestic and foreign and domestic investment can thrive to spur socio-economic development (Schultz and Dupont, 2014). The Judiciary also provides a forum for the just
resolution of disputes to preserve the rule of law, maintain law and order and protect the rights and liberties guaranteed by the Constitution of Kenya (Judiciary Transformation Framework [Kenya], 2012).

Kenya has gone through a series of constitutional reforms since its independence from British Colonial rule in 1963. A recent reform was the promulgation of a new Constitution in 2010. This Constitution contains progressive bills of rights that address issues that have been of great public debate in Kenya such as governance, equity and equality, security and justice (Maingi, 2011). These include:

[...] human rights violations, including land clashes, massacres, arbitrary arrests, extrajudicial execution, and detention without trial, torture, electoral violence, grand corruption and economic crimes that the country has experienced since independence (Mue, 2010 p. 3).

The Constitution establishes the framework for the restoration of constitutional democracy in Kenya and heralds a new beginning for most institutions, Judiciary included.

The quest for judicial reforms in Kenya has been a subject of continuing concern for many stakeholders in the country and even the international community. The former Chief Justice and President of the Supreme Court in Kenya in 2011 lamented that:

[...] we found an institution so frail in its structures, so thin in resources, so low in its confidence, so deficient in integrity, so weak in public support that to expect it to deliver justice is wildly optimistic, we found a judiciary destined to fail (Mutunga, 2011).

Indeed, the desire by the Kenyan public for a new Constitution has been spurred by decades of dissatisfaction with the Judiciary’s performance and susceptibility to impunity (Ndungu, 2012). A report from the security sector reforms noted that the Judiciary was widely perceived as the weakest branch of government in Kenya, while the Kenyan Judiciary is the most incompetent in Africa (Constitution of Kenya Review Commission, 2002; Maseh, 2015b). In addition, judges in Kenya often accepted bribes and many were susceptible to political influence, while courts were understaffed and underfinanced, and Kenyans awaiting trial faced long delays that violated the right to due process (Human Rights Watch, 2012). The Constitution 2010 paved the way for Kenyans to institute the much-needed judicial reforms in this arm of government.

The Kenyan Judiciary launched its transformation framework in May 2012, with the three main pillars being: access to and expeditious delivery of justice, public participation and engagement and stakeholder engagement (Judiciary Transformation Framework [Kenya], 2012). With these pillars in place, the Judiciary hoped to inculcate a culture of openness in line with the spirit of the Constitution 2010 to inspire faith and confidence in the people of Kenya.

2.2 Overview of open government

The concept of open government has emerged to describe a rethinking of governance and how administration should adapt their procedures to meet the demands and necessities of their citizens (Alonso et al., 2011). Sandoval-Almazan (2015, p. 10) has defined open government as:

[...] technological institutional platform that turns governmental data into open data in order to allow their use, protection and collaboration by the citizens in processes of public decision making, accountability and improvement of public services.

Benefits of open government can therefore be categorized into political and social benefits which include transparency, democratic accountability and creation of trust in government; economic benefits including stimulation of innovation, development of new products and services and availability of information for investors and companies; and operational and
technical benefits which include creation of new data based on combining data, validation of data and sustainability of data (Janssen et al., 2012). The ready availability of information about what governments are doing and why is increasingly recognized as an important precondition to meaningful exercise of democratic accountability, transparency and building of trust in government (Janssen et al., 2012).

The earliest form of democratic governance is participatory democracy in which through discussions and deliberations, citizens engage directly in decision-making about their civic affairs (Harrison et al., 2012; Sandoval-Almazán, 2015). Participatory democracy requires individuals to become more knowledgeable about the perspectives of others and the interests that underlie those perspectives so they may deliberate more effectively (Harrison et al., 2012). This calls for execution of open government as a tool for the democratic participation.

The US and UK Governments are some of the most prominent practitioners of the open government, offering data that are usable and freely exploitable by non-governmental organizations, activists, real estate developers, IT companies, people and organizations (Alonso et al., 2011). President Barack Obama of the USA, for instance, signed a memorandum on transparency and open government in January 2009, thus affirming his administration’s commitment toward creating an unprecedented level of openness in government (Orszag, 2009).

In the UK, significant progress toward open government has been observed, with the establishment of the Data.gov.uk portal being the most significant development to allow open access to government data sets (Davies, 2010). The UK Government is increasing transparency, for instance, by opening up data on public spending and crime and has shown commitment to spreading the practice of openness globally (Thurston, 2012). Since 2012, “the United Kingdom has played a leading role in international efforts to share this open approach so that people across the world can hold their governments accountable” (Thurston, 2012, p. 18).

Other countries that have demonstrated success in Open Government Initiatives include Brazil and Singapore. According to Open Government Partnership Report (2013), Brazil is one of the eight founding countries of Open Government Partnership whose formal participation started in September 2011. Brazil started off with 32 commitments and by early 2013, all the commitments had been implemented focusing on using technology to improve access to information, better service delivery, public integrity and better management of public resources (Open Government Partnership, 2013).

Similarly, as part of its strategy to drive social innovation and deepen co-creation efforts with the citizens, the Singapore Government launched a one-stop data portal, data.gov.sg, in 2011 (Infocomm Development Authority [Singapore], 2013). Accordingly, the public could access over 8,800 data sets from more than 60 public agencies for app development or research. The success of the open data like in other jurisdiction depends on successful deployment of ICT, thereby playing an important role in shaping the future of Singapore. The Singapore Government is seeking to provide consistent high-quality and seamless broadband experience for residents by improving pervasiveness and connectivity as a means toward the success of open data.

In contrast, in Africa, the idea of open government is not yet well understood and practiced. African countries have generally been slow to embrace the Open Government Initiative largely because of the dismal performance of many African Governments on governance, anti-corruption and transparency indicators (Collaboration on International ICT policy for East and Southern Africa, 2012; Yanguas and Bukenya, 2016). Corruption, poor service delivery and undemocratic governance survive on systems that keep information hidden from the public and bureaucracies which place near unfettered power into the hands of the few public officials that control this information (Collaboration on International ICT
policy for East and Southern Africa, 2012). However, South Africa has taken a leadership role in embracing open government in Africa followed by Kenya, Tanzania, Liberia and Ghana (Excell and Sendugwa, 2012; Lowry, 2013). One key aspect in Kenya’s Open Government Initiative is the citizens’ right to access information and the state’s duty to provide the information without any discrimination as spelt out in the Bill of Rights Chapter 4 Article 35 of the Constitution 2010 of Kenya (Republic of Kenya, 2010).

One key pillar upon which the 2010 Constitution is constructed is continuous engagement with citizens in the development of bills, the public vetting of state officers and oversight role on public affairs. Retired President Mwai Kibaki of Kenya launched the Kenya Open Data Initiative in July 2011 that was aimed at opening up the government to the public by providing citizens with granular data relating to Kenya’s development so that every citizen could be empowered to participate in development (Excell and Sendugwa, 2012; Majeed, 2012). One of the key features of Kenya Open Data Initiative is the open government data portal initiative which was widely acclaimed globally as one of the most significant steps Kenya had made to improve governance and access to information.

2.3 Maturity models
Maturity models have existed as a concept for at least two decades. A maturity model is a management tool designed to help organizations implement effective processes in a given management discipline (Simon et al., 2010). It is a “structured collection of elements that describe characteristics of effective processes”. It provides a place to start, the benefit of prior experience, a common language, a framework for prioritizing actions and a way to define improvement (Murray and Ward, 2007, p. 5). The maturity model concept became most prominent through computer software engineering in the 1980s and 1990s (Liu, 2002) and has since spread to several disciplines including business analytics (Cosic et al., 2012), enterprise content management (Katuu, 2013; Katuu, 2016a; Pelz-Sharpe et al., 2010), financial management (McRoberts and Sloan, 1998), health sector (Katuu, 2016b; Vital Wave Consulting, 2009) and project management (Kerzner, 2011).

Maturity models are developed on the basis that organizations do not move from zero capability to optimum capability instantaneously but rather progress along a journey of maturity (Murray and Ward, 2007, p. 5). The number of levels for each model may vary from three to seven as illustrated in Table I.

2.3.1 Open government implementation model. This study was informed by a maturity model known as the Open Government Implementation Model (OGIM) developed by Lee and Kwak (2011) as a road map that government agencies can follow in moving toward the accomplishment of a more open government. The need for monitoring capability in the US
Government was in response to a directive from the White House in December 2009 (Scott and Smith, 2016).

The OGIM defines four implementation stages and recommends that government agencies should advance their Open Government Initiatives incrementally, focusing on one implementation stage at a time. The four implementation stages as shown in Figure 1 are: increasing data transparency; improving open participation; enhancing open collaboration; and realizing ubiquitous engagement. Lee and Kwak (2011) argued that by following the sequence, agencies can minimize risk and effectively harness the power of social media to engage the public. The OGIM model is depicted in Figure 1.

From Figure 1, with each successive implementation stage, public engagement and openness of government work increases, thus producing greater value and benefits for both government and the public. However, the technical and managerial complexity of the Open Government Initiatives also increases at each stage. As a result, agencies should expect to face greater challenges and risks in later implementation stages.

As modelled by Lee and Kwak (2011), data transparency is the first step toward an open government. At this stage, governments and agencies should focus on making data and information available to citizens so that they can make meaningful contributions to government and/or agency operations and decision-making. According to Araujo and Tejedo-Romero (2016, p. 329), availability of information about government organizations allows citizens and other external actors to monitor and assess internal work and performance of the public organizations. Therefore, the success of this stage is dependent on identifying high-value, high-impact data for the public and improving and assuring data quality in terms of accuracy consistency and timeliness (Lee and Kwak, 2011). Consequently, governments and agencies should put in place an effective governance structure as well as processes to formally identify relevant data and/or information, assure its quality and publish it in a timely manner. Data quality is critical, as low-quality data may misinform and mislead the public about government work and performance (Lowry, 2013).

With the achievement of data transparency, the second phase of the implementation process focuses on improving open participation of the public in government work and decision-making through various methods and tools. Open participation enhances policy decisions and government services by welcoming and using the input of the public. While Stage One opens up government data to the public, Stage Two opens up the government itself to the public’s ideas and knowledge. At this stage, agencies turn to social media and
Web 2.0 tools including Web dialogues, blogs, micro blogging, social networking, among others, that are considered as expressive social media. Khan et al. (2014) argue that social media can play an instrumental role in promoting open governance and foster transparency in the public sector by giving citizens a voice. Through these tools, the public are allowed to engage in informal, spontaneous and conversational interactions with governments (Bonabeau, 2009). These interactions help government agencies to make informed, reliable decisions in real time.

The open participation of Stage Two if managed well will create an environment with meaningful collaboration between the government agencies with members of the public for better development. Open collaboration refers to the public engagement in complex tasks or projects that aim to produce specific outputs. Such tasks include group writing and editing of documents, wiki applications development and open source software development among others. This stage relies on collaborative social media such as wikis, Google Docs and JIVE SBS (Lee and Kwak, 2011). Agencies at Stage Three collaborate with other agencies, the public and the private sectors by using government data and public input and feedback and co-create value-added government services for the public response to national emergencies/natural disasters and innovation of products and services. This stage requires increased use of modern ICT equipment and very good internet connectivity.

The last implementation step is the realization of ubiquitous engagement. At this stage, agencies take transparency, participation and collaboration to the next level of public engagement. The agencies improve and fine tune existing Open Government Initiatives to maximize their benefits.

According to Lee and Kwak (2011), agencies at this stage strive to achieve two important goals:

1. Public engagement becomes easier and more accessible through mobile and ubiquitous computing devices and applications. Here, the public accesses government data, and participates and collaborates using smartphones, tablets, laptops, desktop computers, among others; and
2. Seamless integration of various public engagement methods, tools and services within and across government agencies so that the public can easily navigate and engage in various activities without having to jump around different applications or keep logging in and out.

At this stage, therefore, the agencies, the public, the private sector and other stakeholders form and nurture a sustainable ecosystem and a virtuous cycle for effective public engagement.

2.3.2 Relevance of the model to the study. Although the OGIM was modelled for use by agencies in a developed part of the world (USA), it was found to be relevant for the current study as a benchmark on how the Kenyan Judiciary could implement its Open Government Initiative. The Kenyan Judiciary, as mentioned earlier, launched its Judiciary Transformation Framework in 2012 whose major focus was expeditious delivery of justice and public and stakeholder engagement (Judiciary Transformation Framework [Kenya], 2012). At the time of the study, the Judiciary was still at its very formative stages of opening up. Its entire transformative agenda was then aimed at provision of information to the public so as to increase its transparency and accessibility to the public (The Judiciary [Republic of Kenya], 2013). It would therefore seem that the OGIM would offer a road up on how to progress with the implementation process going forward for maximum benefit.

In accordance to the OGIM therefore, the Kenyan Judiciary should implement its Open Government Initiative sequentially from the first step to the fourth step. Hellberg and
Hedstrom (2015) posit that agencies must work with the open agenda in steps, level for level, and data transparency is an enabler for open participation, enhanced collaboration and ubiquitous engagement. Conversely, measures aimed at providing information to the public on the Judiciary’s work and performance should be put in place as a matter of priority. This way, the citizens will be more informed, and they can then make meaningful contribution to the Judiciary’s operations. In their Open Government Maturity Model, Lee and Kwak (2011, p. 496) observe that “as government agencies move to higher maturity levels, the public becomes more engaged and greater value of open government is realized”. The OGIM is, therefore, suitable for the current study as a benchmark on how the open government should be implemented going forward.

3. Methodology

The paper reports part of the findings of an empirical study undertaken between April 2014 and December 2014. The study was carried out at the high court and magistrate courts in Nairobi and Uasin Gishu counties. Nairobi County was selected because it is the capital of Kenya where the law courts are concentrated with a large number of civil and criminal cases being handled. On the other hand, the Uasin Gishu County was selected, as it is quasi-urban and hence removed from the capital and represents the status of openness in the judicial system outside Nairobi. The population in this study comprised staff from both the technical and administrative units of the Judiciary. The technical unit comprised judicial staff (judges and magistrates), court registrars and deputy registrars. On the other hand, the administrative unit comprised the executive officers, records officers (this cadre are however designated as archivists in the Kenyan Judiciary) and registry assistants (this group is designated either as executive assistants or clerical officers) in both the high court and the magistrates’ courts.

We acknowledge a limitation with the unit of analysis for this study. We decided to focus on Judiciary staff, as the Judiciary Transformation Framework (JTF) had just been launched and our focus was on structures that the Judiciary had put in place and whether from their point of view any gains in justice delivery had been made. We, however, recommend a second phase of the study which will seek views from the public on the justice system in Kenya with regard to the on-going transformation. The relative sizes of the population that was involved in the study are therefore reflected in Table II.

The total population for this study was considered small (Table II); therefore, we took a complete enumeration of the study population (census) by including all members of the population in the study.

The study adopted a qualitative approach, where a case study design was used. Methodic triangulation was, however, used to collect data through interviews, questionnaires and

<table>
<thead>
<tr>
<th>Category of staff</th>
<th>Population (Nairobi County)</th>
<th>Population (Uasin Gishu County)</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Court Registrars</td>
<td>4</td>
<td>a</td>
<td>4</td>
</tr>
<tr>
<td>Deputy Registrars</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Judicial Staff (Judges and</td>
<td>71</td>
<td>11</td>
<td>82</td>
</tr>
<tr>
<td>Magistrates)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Officers</td>
<td>11</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Records Officers (Archivists)</td>
<td>12</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Registry Staff</td>
<td>20</td>
<td>4</td>
<td>24</td>
</tr>
</tbody>
</table>

**Table II.**

Population of the study

*Source: Office of the Chief Justice [Kenya Judiciary] (2013); a all court registrars are based in Nairobi*
4. Findings

Several questions were asked to establish the strategies that the Judiciary used to implement its Open Government Initiatives and the level of the implementation. Details of the findings are provided in this section.

4.1 Implementation strategies for open government

To understand how the Judiciary was becoming more accessible to the public, and possibly the level at which the openness had been implemented, we asked those interviewed to indicate the strategies that were being used to open up the Judiciary to the public. All the respondents pointed out that the Judiciary website was a key tool used to increase access to the public. One of the respondents (R11) explained that the cause lists and summaries of cases of public interest were often posted on the website. Other strategies mentioned were e-mail service, Judiciary open days, court users committees and short message service (SMS), where one respondent (R11) explained that members of the public could communicate with the Judiciary through a number (20583) in one of the common mobile networks service providers.

This response is complemented by data from a document reviewed (The Judiciary [Republic of Kenya], 2013) which identified several channels used to publish information to guide the public on how to access and use court services. These include the use of website; production of television documentaries; publication of reports; and notices and posters, as well as leaflets and brochures. The report indicated that the Judiciary’s website had continued to be an important source of news and useful information for many people, as it provided a search-driven access to information, services, directories and mobile applications. According to the report, summaries of cases of public interest and cause lists from courts were published on the website. The website had also become a repository of policy, official speeches and general regulations. Additionally, the report identified social media as a platform where court users interacted with officers and as a medium to post adjournment notices.

The judges and magistrates were also asked in the questionnaires to indicate the strategies the Judiciary was using to open up to the public, and they gave multiple responses as shown in Figure 2.
Figure 2 shows that the most commonly used strategy for openness was the Judiciary website and Judiciary Open Days with 43 (100 per cent) and 41 (95.3 per cent) respondents, respectively. Other measures given were social media with 14 (32.6 per cent) respondents, mobile telephony with 12 (27.9 per cent) and government open data portal with 5 (11.6 per cent) respondents.

The OGIM identified increasing data transparency as the first step in the implementation of Open Government Initiatives (Lee and Kwak, 2011). From the findings of the study, it would seem that the Kenyan Judiciary was still at the first step (increasing transparency) of open government implementation. The study established that several channels were used to publish information so that the public would be guided on access and use of court services. These channels included the Judiciary website which reportedly was used to post cause lists, summaries of cases of public interest, official speeches, policies and other regulations, to name but a few; e-mail services; judicial road shows; Judiciary Open Days; court users committees and the social media such as Facebook.

The judicial road shows, for instance, were held in the week that the judges would traditionally hold their annual colloquium, and the judges, magistrates and kadhis across the country marched in a symbolic gesture to take justice to the people (The Judiciary [Republic of Kenya], 2013). In the process, the officers held meetings in public places to explain how the court works, and how one could access and use them. Additionally, there was an increasing move toward localizing strategies aimed at increasing transparency and opening up to the public. The High Court and Magistrate Courts in Uasin Gishu County, for instance, were reported to be receiving at least four primary school delegations every month to create awareness about the Judiciary operations and functions. In the High Court in Nairobi, the Civil Division had introduced a feedback form in every case filed, while the Family Division reportedly communicated with parties on the status of cases by way of telephone. On the other hand, rulings and judgments were emailed to parties in the Judicial Review and Constitution and Human Rights Divisions.

Consequently, the Judiciary, through the eyes of the majority of the respondents, was more transparent and accountable, as more information on the Judiciary was available to the citizens. This view is shared by Armstrong (2011) in a study on an examination of transparency on local government websites which noted that one way that transparency in government/citizen relationship is gauged is through the availability of information. The author argues that as more information appears on government websites, trust and confidence in government leaders increases. From the findings, therefore, it would seem that the Judiciary was moving in the right direction toward open government implementation as provided for in the OGIM. Lee and Kwak (2011) identified two issues as being important at the data transparency stage: identifying high-value data for the public and improving and assuring data quality in terms of accuracy, consistency and timeliness. Following this, the Judiciary should work on the data and/or information that is made available to the citizens to ensure that it is of high quality. It should then move to the next steps of implementation as provided for by the OGIM.

4.2 Prospects for openness

To establish the extent/level of openness in the Judiciary, the registrars were asked to indicate how they thought the Judiciary had benefited from implementing the Open Government Initiative. This elicited several responses as shown in Table III.

The judges and magistrates were also asked to indicate the benefits of opening up the Judiciary, and their responses are summarized in Figure 3.

Figure 3 shows that all 43 (100 per cent) judges and magistrates felt that openness in the Judiciary had brought about enhanced transparency and accountability. A significant
number [40 (93 per cent)] indicated enhanced judicial service delivery, whereas slightly more than half [27 (62.8)] indicated increased public participation. Lastly, a few [13 (30.2 per cent)] felt that openness had also brought about increased public collaboration.

These findings were complemented by documented evidence which showed that the Kenyan Judiciary had made some strides in transforming itself by opening up to the public (The Judiciary [Republic of Kenya], 2013). The report indicated that the most important investment from which the institution had arguably had the greatest return had been on culture change. The report explained that the difference in the treatment of members of the public in court stations and courtrooms is an outcome of this investment. Furthermore, the following changes were identified: establishment of a customer care desk in each court station; a growing and effective public complaints system; a more widespread internal ownership of the transformation program; and, more significantly, an important realization among staff that the Judiciary is and should always be a public rather than a self-service institution. These depict significant changes in the Judiciary and create an image of the Judiciary that has never before been seen.

Perhaps, the benefits of increasing access to/opening up the Judiciary can be summarized by the response of one registrar (R1) who said:

Opening up the judiciary has introduced a new culture of doing business, transparency and accountability has been raised and justice delivery has been taken to a new level. Judicial officers and staff have traditionally maintained distance in an attempt to communicate impartiality. This posture had limited public access to information and created unnecessary mysticism which fed a
negative public perception of the justice system in Kenya. With the move towards openness, the judiciary has adopted deliberate innovations that provide information to the public and receive feedback as well as position itself as an important participant in the public arena by opening itself up to scrutiny through continuous public, stakeholder and media engagement.

The findings indicated a positive change as observed by the judicial officers and staff that took part in the study. Among the benefits of openness that stood out were:

- change of organizational culture, which, as explained, has made the Judiciary wear a human face after many years of distancing itself from the people it ought to serve;
- enhanced transparency and accountability enabled by provision of information on Judiciary operations and how the public could access Judiciary services;
- enhanced judicial service delivery;
- increased public participation;
- positive image of the Judiciary; and
- improved public confidence in the Judiciary.

These benefits underline the importance of building Open Government Initiatives. Moreover, open government brings about: greater transparency and accountability of governments; efficiency and efficacy of public service delivery; and innovation in the creation and improvement of public services, to name but a few.

4.3 Challenges faced by the Judiciary as it transforms itself and moves toward openness

We asked a question regarding the challenges that the Judiciary faced as it tried to transform itself and move towards openness. The majority of the respondents interviewed indicated lack of trained personnel, especially among the paralegal staff, lack of records management policies and guidelines, inadequate tools and equipment, inadequate storage space and equipment and general lack of resources.

The judges and magistrates were also asked to indicate the challenges they faced as they discharged their duties and their responses are reflected in Figure 4.

Figure 4 indicates too much openness as a major challenge facing the Judiciary, which, as explained by one judge, in an open-ended question, had drastically increased litigation contributing to backlogs in the courts. Other challenges cited by the judges and magistrates were high public expectations, 21 (48.8 per cent); negative criticism, 19 (44.2 per cent); untrained paralegal staff, 15 (34.9 per cent); and inadequate funding, 8 (18.6 per cent).

![Figure 4. Challenges facing the Judiciary](source: Field Data (2014))
The findings showed that the Judiciary was still grappling with challenges such as: too much openness which ordinarily would be viewed as a benefit but as explained by the judicial staff resulted in a drastic increase in litigation which had consequently contributed to case backlogs in the courts; negative criticism, which, as explained, is sometimes misplaced as was illustrated with a situation where the Chief Justice (CJ) advised on the use of alternative dispute resolution mechanism and this was blown out of proportion by the media to indicate that the Chief Justice was rooting for witchcraft; untrained paralegal staff who ordinarily include records staff, which, as explained elsewhere, were not adequately trained and could not offer the much-needed support to the delivery of justice; inadequate funding which had resulted in inadequate storage space and equipment and a general resource inadequacy, all of which negatively affected service delivery, especially records management in respect to inadequate storage space; and absence of records management policies and guidelines.

These challenges were attributed to the fact that the openness agenda was still at the first step of implementation. Until they are addressed, the Kenyan Judiciary may not move forward with its implementation to other levels. The study, therefore, recommends that these challenges be addressed to propel the implementation to the next level in accordance to the OGIM.

4.4 Nexus between Open Government and Judiciary transformation

As mentioned earlier, Open Government is a commitment that all government operations are open to public participation and scrutiny. Its three pillars (transparency, participation and collaboration) are instruments with which governments and government agencies can promote a climate of trust.

The Kenyan Judiciary has come a long way from decades marred with corrupt practices and general public dissatisfaction resulting in waning public confidence in the Judiciary (Judiciary Transformation Framework [Kenya], 2012; Ndungu 2012). The promulgation of the Constitution 2010 provided the means with which Kenyan institutions including the Judiciary would restructure their operations.

Consequently, the Judiciary launched its JTF in May 2012 as a response to the ideals of the Constitution 2010. Among the JTF key pillars are public and stakeholders’ participation and engagement which revolves around opening up the Judiciary. The State of the Judiciary Annual Report states that JTF is the Judiciary’s blueprint for effecting systemic and cultural change in judicial operations (The Judiciary [Republic of Kenya] 2013). The report identifies public and stakeholders’ participation and engagement as an overriding objective of all the work done by the courts. It therefore emerges that there is a strong and important link between openness and transformation agenda in the Judiciary. The more open the Judiciary becomes, the more transformative it is and the more its justice delivery is improved. In the words of one of the court registrars (R1), opening up the Judiciary has introduced a new culture of doing business, transparency and accountability has been raised and justice delivery has been taken to a new level.

5. Discussions

The initiative of open governance has, in part, emerged from a consciousness in governments and government agencies that information belongs to the public (Klaus, 2016, p. 104). This information must therefore be provided to the rightful owners – the public. The successful implementation of the Open Government initiative is dependent, among other things, on governments’ or agencies’ ability to avail trustworthy information about government’s or agency’s actions and decisions (Goh et al., 2009; Lemieux, 2015, p. 13). As explained earlier, Open Government is hinged on three principles – transparency, participation and collaboration. The study investigated the
Open Government Initiative in the Kenyan Judiciary and its contribution to the on-going Judiciary transformation aimed at enhancing justice delivery. The findings revealed that the Kenyan Judiciary in conformity to its transformation framework had put in place various mechanisms to improve availability of information on the Judiciary by the public. The Judiciary was therefore seen to be more transparent and open to the members of the public than it was before. Klaus (2016) observes that most studies on open government regard transparency as a driving force pushing countries to higher levels of openness. According to the US Open Government directive, democracy requires accountability, accountability requires transparency and transparency requires visibility (Hellberg and Hedström, 2015). In the long run, information which is an essential component of transparency must be availed to the citizens and stakeholders for the Open Government Initiative to thrive. Transparency is a broad concept that includes the availability of information and the access and usability of this information by citizens and stakeholders (Araujo and Tejedo-Romero, 2016; Kastenhofer and Katuu, 2016). It would therefore seem that the Kenyan Judiciary is headed toward the right direction by availing information on its operations and performance through the channels identified.

Increasingly, governments all over the world are adopting ICTs to carry out their activities and operations. Lemieux (2015, p. 5) observes that with an increase in the adoption of ICTs, both public and private sector organizations, has come to rely upon a growing array of communications technologies to create, exchange and store information. Governments and agencies should therefore leverage on these technologies and more so on social media to enhance their transparency for successful implementation of Open Government Initiatives. The findings of the current study established the strategies that the Kenyan Judiciary had put in place for their transformative agenda to include its website, email services, mobile telephony and social media, to name but a few. Therefore, the finding is similar to observations that social media, because of their collaborative and participatory nature, can play an instrumental role in promoting open governance and foster transparency in the public sector by giving citizens a voice (Khan et al., 2014). Indeed, social media represent a powerful instrument for promoting interactions between government and citizens.

Nevertheless, ICTs may not be a panacea for successful Open Government Initiatives. It also calls for a culture in which government officials are open for innovation, willing to share knowledge and information and openly communicate across bureaucratic boundaries. Ruijer and Huff (2016, p. 336) argued that an open culture is a precursor for Open Government reform and unless organizational cultural values, attitudes and behavior are addressed, the successful implementation of Open Government policies may be hindered. The findings of the current study further revealed that with the implementation of the Open Government Initiative, commendable gains have been achieved. Among the benefits felt included increased transparency and accountability, institutional cultural change and an overall enhancement of justice delivery. However, the findings also showed challenges that the Kenyan Judiciary faced as it implemented its Open Government Initiative. These challenges must be addressed so that the Open Government Initiative is taken to the next level of implementation.

6. Conclusions
The study investigated the Kenyan Judiciary’s Open Government Initiative and its contribution to Judiciary transformation in general and enhanced justice delivery in particular. The study findings revealed that the Kenyan Judiciary was at its initial stages
of implementing the initiative. The launch of the JTF had provided a mechanism where the citizens and stakeholders were encouraged to freely engage with the Judiciary. Consequently, several strategies were put in place to provide citizens with information on judicial matters so that their engagement could be felt.

Following the implementation of the strategies, the Judiciary was seen to be more transparent, responsive and accountable to both the citizens and the stakeholders. The findings further indicated other far-reaching benefits of implementing the Open Government Initiative, all of which were seen to raise justice delivery to a new level in Kenya. This paper, therefore, contributes to changing the peoples’ perception of the Kenyan judicial process from one that is marred with too many malpractices to one that is effective and efficient. Consequently, people’s trust and confidence in the Judiciary will be improved and the overall justice delivery enhanced.

However, the study findings revealed challenges that were still facing the Kenyan Judiciary that if left unchecked would undermine the delivery of justice in the long run. Key among these challenges were inadequate trained paralegal staff which included records staff, lack of records management policies and guidelines, inadequate tools and equipment, inadequate storage space and equipment and general lack of resources (Maseh, 2015a). Therefore, the findings the study concluded that the Open Government Initiative in the Judiciary was a catalyst to enhanced justice delivery. However, for better results, data and/or information that is availed to the citizens and stakeholders need to be reliable, accurate and trustworthy. Following this, policymakers should ensure that the information availed to the public meets the minimum threshold of reliability, accuracy and trustworthiness. Moreover, the study established a close relationship between openness in the Kenyan Judiciary and its justice delivery. This contributes to the body of knowledge by linking openness in the Judiciary to improved justice delivery.

References


Katuu, S. (2016b), “Transforming South Africa’s health sector – the eHealth Strategy, the implementation of electronic document and records management systems (EDRMS) and the utility of maturity models”, Journal of Science and Technology Policy Management, Vol. 7 No. 3.


Corresponding author
Elsebah Maseh can be contacted at: jmaseh@gmail.com
Emerald is excited to announce a recent partnership with Peerwith, a platform that provides authors with a variety of services.

The Emerald Peerwith site can be found here: https://authorservices.emeraldpublishing.com/

Peerwith connects academics seeking support for their work with a relevant expert to get their research submission-ready. Peerwith experts can help with the following: language editing, copy editing, scientific editing, translation services, statistical support, funding application support, visuals, video, publication support, literature search, peer review and indexing services. Authors post their assignments on the Peerwith site, experts provide a quote, and the fee and conditions are then agreed upon directly between the author and the expert.

While we are not, of course, guaranteeing publication upon use of Peerwith, we hope that being able to direct academics to this resource either before submission or during the peer review process will help authors further improve the quality of their papers and increase their chances of positive reviews and acceptance.

Academics with relevant expertise can sign up as an expert on the Peerwith system here: https://www.peerwith.com/services/offer
Preserving over 100 years of management research online

A lifetime investment for your institution, Emerald Backfiles will significantly enhance your library’s offering by providing access to over 125,000 articles from more than 260 journals dating back to 1898.

Visit emeraldinsight.com

Get Backfiles Collections for your library

Recommend Backfiles to your librarian today.
Find out more: emeraldpublishing.com/backfilescollections
Number 1

1 Editorial advisory board
2 An empirical study on application and efficiency of gridded management in public service supply of Chinese Government
   Bai Xiu Yin, Muhammad Imran Hanif, Li Fensheng, Muhammad Shehzad Hanif and Gu Yinhua
16 Characteristics of closed car-sharing services for urban public housing residents
   Wanhee Byun, Jung-Beom Lee, Hoyoung Kee and Myungsik Do
32 Presenting a model for evaluating Internet advertisements for modification of energy consumption
   Javad Khazaei Pool, Reza Salehzadeh and Rashid Khalilakbar
43 The effect of innovativeness and customer-oriented systems on performance in the hotel industry of Iran
   Mohammad Reza Jalilvand
62 Business innovation in Indian software industries
   Dileep Baragde and Neeta Baporikar
76 The Kenyan Judiciary’s Open Government Initiative: prospects and challenges
   Elsebah Maseh and Shadrack Katuu