

## Electronic Information Sharing in Transforming the Provision of Education Services to the Yemeni Public Universities

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**Abstract:** Information sharing is one of the important aspects that improve the quality of businesses and organizations. With the advent of Information and Communication Technology (ICT), electronic information sharing could transform the provision of services to universities with the right and quality information and with minimum cost. Yemen Center Information Technology of Higher Education (YCIT-HE) in Yemen provide services to the Yemeni public universities. However, not all Yemeni public universities are able to share information electronically due to low experiences and insufficient resources such as information. The lack of electronic information sharing between the Yemeni public universities and YCIT-HE is considered as a critical gap in order to increase the quality and relevance of information in supporting good decision making. Four dimensions or layers of electronic information sharing (environmental, technological organizational and individual) with twelve factors have been proposed in this study to determine the potential in enhancing the provision of education services to the universities. Cloud computing and social media are included with an expectation to bring a transformation in the provision of services to universities.

**Key words:** Information sharing, electronic information sharing, higher education sector, provide service, expectation, transformation

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### INTRODUCTION

Information sharing is transfer and exchange of information among employees between inside government agencies or outside a government agencies or by giving an access to other organization to their data and information in order to improve decision making (Dawes, 1996). Information sharing provides many benefits such as integrates services, provides high quality services, enhance policy-making process, improve decision-making process, creates high quality product, reduce research process, develop the formulation, implement and evaluate the organization's policies (Yan *et al.*, 2009). Information sharing via the internet is known as Electronic Information Sharing (EIS), Electronic Information Sharing (EIS) is the best way to provide the public sector with the information at the right location, at the right time and at the cheapest cost. Electronic Information Sharing (EIS) is importantly needed to support decision making and provide better services in any public organization in general and in public university specifically (Bigdeli *et al.*, 2011). The Yemen public universities, like other universities, make use of the internet to get the information and to share information between public universities staff and YCIT-HE (Alsurori and Salim,

2010). However, the limitation of electronic information sharing is considered as an enormous gap between Yemen public universities and YCIT-HE (Alhamassy, 2012).

**Literature review:** According to Yang and Maxwell (2011), electronic information sharing is increasingly important in almost all organizations and institutions. There are several reasons for the importance of electronic information sharing in public organization. Electronic information sharing increases the information amount which can help the decision makers to make better decisions (Akbulut *et al.*, 2009; Bigdeli *et al.*, 2011) and to provide citizens best service with right services at the right location, the right time and at the cheapest cost (Bigdeli, 2012).

The information sharing among universities or between universities and ministry of education has many benefits such as providing efficient and effective services. For instance, the South Korea believes that it is important to use electronic information sharing among education sector in order to provide more efficient and effective processes (Kim, 2006). In Cambodia, the higher education institutes highlighted on the challenges such as on the difficulty to coordinate among universities in terms of

information sharing (Vicheth, 2012), thus, electronic information sharing could bring benefits on the issues. In Malaysia, according to Miskon (2013), Malaysian Higher Education's important plan for the next years is to handle communication and information sharing among stakeholders.

Moreover, according to Alsurori and Salim (2009), the Ministry of Higher Education and public universities in Yemen should deliver their information and services by electronic information sharing project. Electronic information sharing can provide better and higher quality services to their employees in public universities in Yemen in real time (MHESR., 2006; Mohammed *et al.*, 2014).

Akbulut *et al.* (2009) highlighted three main context of EIS in public sector: intra-organizational sharing of information which refers to personal sharing of information, inter-organizational information sharing which refers to information being shared between at least two organizations and inter-agency/department information sharing which refers to information shared across departments inside an organization.

Electronic information sharing has two types of functions, horizontal functioning and vertical functioning. The horizontal functioning of information sharing means sharing information within same level of organization such as sharing information between local governments. The vertical functioning of information sharing means sharing information with different level of organization (Jing *et al.*, 2014). In other words, the vertical information sharing refers to sharing information within the organizations starting from top to bottom.

Currently, there is limitation of studies on EIS in terms of vertical or horizontal functioning between government organizations (Jing and Pengzhu, 2009; Jing *et al.*, 2014). In specific, there is lack of studies on any vertical EIS in inter-organizational in public organizations and higher education of institutions in Yemen (Alsurori and Salim, 2010). Thus, a study was conducted to focus on vertical functioning information sharing between Yemen public universities and Yemen Center Information Technology Higher Education which refers to different level of organizations.

## **ISSUES AND CHALLENGES**

In the Republic of Yemen, public universities face limitation while sharing their information electronically with the Ministry of Higher Education and Scientific Research (MoHESR) in general and with YCIT-HE in particular. They mostly share their information using a traditional method (e.g., using paper, fax and email. These

methods provide some challenges that make YCIT-HE faces difficulties in getting the information in real time. They took longer time than is expected, late to get their important research done and thus, affect in delivering services to staff and students in an effective and efficient way.

Some problems of Electronic Information Sharing (EIS) are partly because of the lack of understanding on the benefits of the electronic information sharing (Alsurori and Salim, 2009) among the staff in the university. The limitation of electronic information sharing brings negative influence on the services of the public sector (Estevez *et al.*, 2010; Yang and Maxwell, 2011; Kamal *et al.*, 2012).

Moreover, Yemen faces challenges of sharing information electronically between the public universities and MOHESR in general and YCIT-HE in particular in order to implement its operations and services (Alsurori and Salim, 2009). One of the big challenges in information sharing is when different universities in different location share huge amounts of data and information with YCIT-HE, huge amounts of data and information that have different format and store in different platform. Moreover, the multi databases cannot provide compatibility standards of information system and information quality among organizations.

The second issue is the universities' employees do not have a clear view and understanding of what new technologies can contribute to the development of their institutions and their abilities but they believe that they can successfully accomplish their research without technological support. Finally, is the notion that information sharing and procedures through various departments is accounted to be expensive and vastly rely on the financial status. Furthermore, unpredicted budget restraints is likely to influence the development of EIS projects.

## **THEORETICAL FRAMEWORK**

This study was conducted based on Layered Behavior Model (LBM) and the adoption of social exchange theory and information sharing theory to inspect the factors that influence electronic information sharing between Yemeni public universities and YCIT-HE. These model and theories had been applied in the previous studies of electronic information sharing (Jing *et al.*, 2014). The framework of this study comprises four layers known as external environment layer, technological layer, organizational layer and individual layer. Each layer is composed of several factors.

**External environment layer:** External environmental layer refers to the effects of the external environment on the operations of organizations which are needed to support the development of information sharing (Akbulut, 2003). The empowering environment includes economic, social, cultural and political factors that influence power structures and national institutions in the private and public sectors. Researchers have cited numerous influential effects from the external environment that the agencies cannot ignore (Jing and Pengzhu, 2007b, 2009; Bigdeli *et al.*, 2012). Several environmental factors which have been examined in e-Government such as laws and policies, upper-level leadership and trust (Akbulut, 2003, Akbulut *et al.*, 2009; Jing and Pengzhu, 2007b, 2009; Jing *et al.*, 2014).

**Upper level leadership while:** According to Jing *et al.* (2014), one of the main factors in the electronic information sharing environment is upper level leadership. Upper level leadership means the capability of an external leadership to set rules and standards for sharing information such as data definitions, data standards and information clearing houses (Jing *et al.*, 2014). It can disguise as encouragement or pressure and can fluctuate from no encouragement or pressure to recommendations, requests or offering rewards or imposing penalties (Akbulut, 2003). It is being observed the university made use of various types of power to boost electronic information sharing. Precise plans are included such as encouragement, recommendations, providing incentives and imposing penalties. Yemen public organizations have external effect from the upper level leadership (Kouzes and Posner, 2006; Al-Sharafi and Rajiani, 2013). It is believed that there is an effect associated with some power of the upper leadership in the Yemeni universities towards the use of electronic information sharing. Hence, it is hypothesized that:

- H<sub>1</sub>: upper level leadership will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Law and policy while:** Laws and policies include the rights of government agencies to collect and disseminate information. The government policies can decrease or increase the encouragement of using electronic information sharing among its agencies, thus, it has a solid influence on EIS across organizations, especially, in the public sector (Dawes, 1996; Landsbergen and Wolken, 2001; Gil-Garcia *et al.*, 2005, 2007). The policies and laws support agency and employers because the policies and laws can increase authority and trust between the staff of

agencies (Garcia *et al.*, 2005; Gil-Garcia *et al.*, 2007; Estevez *et al.*, 2010; Kamal *et al.*, 2012). The higher education in Yemen is governed by the laws and policies and most instructions are issued by the government regarding higher education (Alhamassy, 2012). Hence, in this study, a hypothesis presumes the laws and policies and their association with the use of EIS as:

- H<sub>2</sub>: laws and policies will have positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Organizational layer:** Organizational layer contain factors that belong to organization which could have an effect on the use of electronic information sharing among public organizations. These factors can support the staff in an organization to share information with others (Akbulut, 2003). This study focuses on the following factor.

**Financial capability:** Financial capability is referred as the financial capacity that a local agency requires for the sharing of information electronically (Akbulut-Bailey, 2011). The cost of electronic information sharing is primarily correlated to the costs of obtaining the convenient technology for partaking including development cost, operating cost, setup costs, installation costs, integration costs, interfacing costs, communication cost, maintenance cost and in addition to the cost of staff training (Landsbergen and Wolken, 2001; Akbulut, 2003; Jian and Pengzhu, 2007b, 2009).

According to Kapur and Crowley (2008), finance is one of the largest issues in Yemen, although, the comparatively high percentage of public funding dedicated to higher education currently. The finance provided to universities to encounter their running costs is rigorously restricted and the current situation of HEIs in Yemen puts them at a major disadvantage of having no joint bargaining power and incurring a lot of costs for connectivity to internet, purchasing hardware and software to develop a real information system platform (MHESR., 2010). Hence, it is hypothesized that:

- H<sub>3</sub>: while financial capability will have a negative effect on electronic information sharing between Yemen public universities and YCIT-HE

**Top management support:** Top management support means the support of top managers that can develop a better environment in which employees are encouraged to share information with other agencies (Akbulut-Bailey, 2011; Kamal *et al.*, 2012). Top management is exercised through leadership, authority and involvement,

thus further encouraging the staff to electronically share information (Gil-Garcia *et al.*, 2007). This kind of encouragement includes staff incentive such as the organization provides training to utilize the system, application packages and operation systems (Al-Mamary *et al.*, 2014) or money and position (Yang and Maxwell, 2011).

In Yemen, the top management can provide support to staff by encouraging them to use new technology. In other words, top manager can provide a good environment for any new information system (Al-Mamary *et al.*, 2014). Hence, the hypothesis is set up as:

- H<sub>4</sub>: top management support will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Interagency trust:** Interagency trust is considered as one of the essential factors in EIS. Interagency trust can amend the proficiency and precision of EIS among agencies (Kamal *et al.*, 2012). Information sharing causes difficulty in the interactions between participants because they may belong to different departments, hold different values or operate in divergent fields (Akbulut, 2003; Gil-Garcia *et al.*, 2007a; Akbulut *et al.*, 2009).

Researchers have pointed out that the lack of trust between employees in public organizations can create issues in sharing information electronically. Therefore, the YCIT-HE should improve the trust between the staff in YCIT-HE and the staff in public universities in Yemen because trust is an important and essential factor among them. The present study suggests that interagency trust factor affects electronic information sharing between the Yemen public universities and YCIT-HE:

- H<sub>5</sub>: interagency trust will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Technology layer:** This layer refers to ability and the technological capability which can be used to share information electronically (Bigdeli, 2012; Kamal *et al.*, 2012). According to Yang and Maxwell (2011), technological challenges have been considered as the main influence in adopting electronic information sharing in government sectors. Therefore, this study will focus on the following factors: IT capability, information quality, IT compatibility, cloud computing and social media.

**IT capability:** IT capability pertains to the use of technological sources and experiences in government

agencies to motivate employees to electronically share information (Jing and Pengzhu, 2009). It is defined as the accessibility of IT resources, IT expertise and other IT skills in the organizations to motivate staff to share information electronically (Jing and Pengzhu, 2009; Kamal *et al.*, 2012). The IT skills of staff and the availability of software and hardware have influential effects in and within the Yemen public organization (Alsurori and Salim, 2010). The increment of IT capabilities in the Ministry of Higher Education and public universities in Yemen increases electronic information sharing (Alsurori and Salim, 2009). Moreover, the lack of infrastructure presented a huge gap in the IT skills between Ministry of Higher Education and public universities (Alsurori and Salim, 2009; Alhamassy, 2012). For this study:

- H<sub>6</sub>: IT capability will have a positive effect on electronic information sharing between Yemen public universities and YCT-HE

**Information quality:** Number of researchers consider information quality as an important factor to the success of management information system (Alsurori and Salim, 2009; Alhamassy, 2012; Al-Mamary *et al.*, 2014). Information quality consists of several characteristics such as timeliness, accuracy, credibility, currency, authority and adequacy of information sharing (Rong and Cheng, 2010; Bigdeli, 2012). Moreover, information quality has a substantial influence on the information sharing among the government organizations because when employee share a good quality information then that will increase the trust and can enhance the collaboration between staff can affect in agencies (Yang and Maxwell, 2011). The lack of electronic databases in Yemen public universities has contributed to a lower use of electronic information sharing which if it existed, could have provided relevant and updated information to speed up decision making. This problem negatively affects the quality of decisions. Likewise, the lack of information quality is believed to provide some negative effect on decision making and services delivery. According to Alhamassy (2012), among the Yemeni Universities, the information quality is considered as the main issue of electronic information sharing between public universities and YCIT-HE. Thus, the hypothesis in this study is given as:

- H<sub>7</sub>: information quality will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Technical compatibility:** Technical compatibility refers to equivalent levels of software, hardware and skills in every government agency (Estevez *et al.*, 2010; Liu *et al.*, 2011; Bigdeli *et al.*, 2012). Different organizations may use different hardware, software and data standards. Technical compatibility requires the integration of different information systems for participating in an information sharing project (Luna-Reyes *et al.*, 2007). Many studies have specified that the incompatibility of telecommunication networks, software and hardware as well as having unskilled and inexperienced employees negatively affect the EIS among agencies (Dawes, 1996; Landsbergen and Wolken 2001; Jing and Pengzhu, 2007a; Estevez *et al.*, 2010; Yang and Maxwell, 2011; Bigdeli *et al.*, 2011, 2013a, b). Government agencies participating in a project have different values, cultures and even competing interests (Pardo and Tayi, 2007). It is not easy to integrate several different information systems and organizational goals into one information sharing project (Kim, 2006).

This study proposes technical compatibility as the influence factor to increase electronic information sharing between public universities and YCIT-HE. Thus, the hypothesis is formulated as:

- H<sub>3</sub>: technical compatibility will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Cloud computing:** Cloud computing is able to share information and ICT resources among several organizations that support mobile employees and teleworkers (Hayes, 2008). Moreover, cloud computing offers a stress-free and quick accessibility to information with more efficient and effective public sector. These organizations that are willing to research in collaboration may deploy shared services on a cloud environment.

In education, cloud computing provides several profits to e-Learning solutions by giving the infrastructure, platform and educational services straight through cloud suppliers and by means of virtualization, centralized data storage and amenities for monitoring accessibility of data (Pocatilu *et al.*, 2009). In this study, cloud computing is suggested to increase electronic information sharing between Yemen public universities and YCIT-HE. Hence, it is hypothesized that:

- H<sub>4</sub>: cloud computing will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Social media:** Social media sites have become an essential method for the public sector and its components to conduct outreach and share information with stakeholders. In the public sector, social media provides employees an accessibility which means employees at research can utilize social media sites for the determinations of performing official business, professional development or any personnel interests and share information or to attain a common goal or interest and it permits operators to inexpensively instantly issue information in near real time (Hrdinova *et al.*, 2010; Bertot *et al.*, 2010).

These social media sites allow augmented information sharing at a quicker pace, constructing and improving relationships and assisting coworkers to stay joined. It serves as a stage to allow people and societies to display views on government and government organizations. For this study, social media is proposed as one of the factors that can augment EIS between Yemen public universities and YCIT-HE. Hence, it is hypothesized that:

- H<sub>10</sub>: social media will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Individual layer:** Individual layer focuses on the employees in organization (Kamal *et al.*, 2012). Employees in organization are an important entity because the exchange method is based on them. Individual leads an essential part, so as to handle organization with the help of technology and virtually reliant on information in decision making and provide services to the citizen. Organizational member's expectations prior to the initiation of information sharing activities will influence the approach and initiative of researchers towards the sharing process (Jing *et al.*, 2014).

**Benefits:** Benefits refer to the significance of information sharing among staff in public organizations (Jing *et al.*, 2014). Electronic information sharing helps the staffs in the organization to get different kinds of benefits such as improve information quality, increase administrative efficiency, reduce cost, reduce duplicate data collection, improve information accuracy and timeliness, advanced decision making and provide good services quantity and quality (Dawes 1996; Jing and Pengzhu, 2007a, 2009; Estevez *et al.*, 2010; Yang and Maxwell, 2011). Organizational members who were not completely acquainted of the prospective benefits of EIS were found

to be unwilling to participate in it. Moreover, the awareness of benefits of EIS improved the participation in higher education sector (Mohammed *et al.*, 2014).

Therefore, the awareness of benefits of EIS is expected to boost the staffs among the public universities and YCIT-HE employees. Hence, it is hypothesized as:

- $H_{11}$ : benefits will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

**Information stewardship:** Information stewardship is referred as information that belongs to all agencies and not only one individual (Yang, 2011; Kamal *et al.*, 2012). Based on information sharing theory, information stewardship means a person must cope with the information on behalf of others because information must be liberally shared among public organizations. Some agency’s staff feels that information is power, so, they reluctant to share them, so as not to lose that power or the social influence (Kolekofski and Heminger, 2003; Ardichvill *et al.*, 2003). According to Dawes (1996), information stewardship is vital to the achievement of EIS in public organization. When organizational participants are motivated towards information ownership, they consider information as a private resource other than an organizational resource and limit their sharing of information they see as a profit of the entire organization instead of potential internal competitors (Kolekofski and Heminger, 2003). The previous studies showed the significant effect of this factor on electronic information sharing. Thus, this study suggests applying it as an influential factor to increase electronic information sharing between Yemen public universities and YCIT-HE:

- $H_{12}$ : information stewardship will have a positive effect on electronic information sharing between Yemen public universities and YCIT-HE

Twelve hypothesis, under three different layers, have been formulated to determine the influence factors in increasing the use of electronic information sharing between the Yemen Center Information Technology of Higher Education (YCIT-HE) and the Yemeni public universities (Fig. 1). While under the environmental factors while are upper-level leadership, laws and policies while while organizational layer consists of top management support, financial capability and interagency trust. While under technology layer, two factors to be tested, namely IT compatibility, IT capability, information

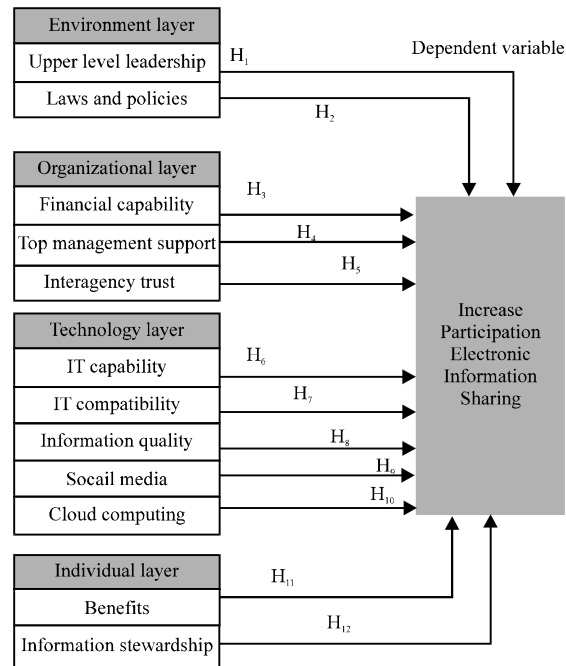


Fig. 1: The proposed model of electronic information sharing

quality, cloud computing while and social media while. The individual layer proposes two factors, benefits while and information stewardship while.

**CONCLUSION**

The lack of electronic information sharing between the Yemeni public universities and YCIT-HE is considered as a critical gap in enhancing the quality and relevance of information in supporting good decision making while electronic information sharing environmental, technological, organizational and individual are the matters that could determine the success or failure of information sharing practices between the Yemeni public universities and YCIT-HE. Under those four layers, this study continued with the formulation of twelve hypotheses namely, upper-level leadership, laws and policies, top management support, financial capability, Interagency trust, IT compatibility, IT capability, Information quality, social media, cloud computing, benefits and information stewardship. Nowadays, with different technologies and applications on the Cyber World, this study took a challenge to include both cloud computing and social media as potential factors in enhancing electronic information sharing between the Yemeni public universities and YCIT-HE. It is hoped that both could contribute a bug transformation in giving

good services to universities. Questionnaires have been designed and a pilot study will be conducted to test the validity and reliability of the items.

## REFERENCES

- Akbulut, A.Y. and J. Motwani, 2008. Integration and Information Sharing in E-Government. In: Encyclopedia of Networked and Virtual Organizations, Putnik, G.D. and M.M. Cruz-Cunha (Eds.). IGI Global, Dauphin County, Pennsylvania, ISBN-13:9781599048857, pp: 729-734.
- Akbulut, A.Y., 2003. An investigation of the factors that influence electronic information sharing between state and local agencies. Ph.D. Thesis, Louisiana State University, Baton Rouge, LA., USA.
- Akbulut, A.Y., P. Kelle, S.D. Pawlowski, H. Schneider and C.A. Looney, 2009. To share or not to share? Examining the factors influencing local agency electronic information sharing. *Int. J. Bus. Inform. Syst.*, 4: 143-172.
- Akbulut-Bailey, A.Y., 2011. Information sharing between local and state governments. *J. Comput. Inform. Syst.*, 51: 53-63.
- Al-Mamary, Y.H., A. Shamsuddin and N.A. Abdul Hamid, 2014. Key factors enhancing acceptance of management information systems in Yemeni companies. *J. Bus. Manage. Res.*, 5: 108-111.
- Al-Sharafi, H. and I. Rajiani, 2013. Leadership practices and talent turnover: Study on Yemeni organizations. *Bus. Manage. Res.*, 2: 60-67.
- Alhamassy, S.A.A., 2012. Decision support systems adoption among strategic decision makers in higher learning Institution in Yemen. Ph.D Thesis, Universiti Utara Malaysia, Changlun, Malaysia.
- Alsurori, M. and J. Salim, 2009. Information and communication technology for decision-making in the higher education in Yemen: A review. Proceedings of the International Conference on Electrical Engineering and Informatics (ICEET'09) Vol. 2, August 5-7, 2009, IEEE, Selangor, Malaysia, ISBN:978-1-4244-4913-2, pp: 321-324.
- Alsurori, M. and J. Salim, 2010. The status of information and communication technology in the higher education in Yemen. *Intl. Rev. Comput. Software*, 5: 712-723.
- Ardichvill, A., V. Page and T. Wentling, 2003. Motivation and barriers to participation in virtual knowledge sharing communities or practice. *J. Knowl. Manage.*, 7: 64-77.
- Bertot, J.C., P.T. Jaeger and J.M. Grimes, 2010. Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Inform. Q.*, 27: 264-271.
- Bigdeli, A.Z., 2012. Inter-departmental information sharing in Local Government Authorities (LGAs): The case of the United Kingdom. Ph.D. Thesis, Brunel University London, Uxbridge, UK.
- Bigdeli, A.Z., M. Kamal and S. de Cesare, 2012. Information sharing in inter-departmental collaboration: A conceptual framework for local government authorities. Proceedings of the 6th International Conference on Theory and Practice of Electronic Governance, October 22-25, 2012, Albany, NY., USA., pp: 485-486.
- Bigdeli, A.Z., M. Kamal and S. de Cesare, 2013a. Information sharing through inter-organisational systems in local government. *Transform. Govt.: People Process Policy*, 7: 148-176.
- Bigdeli, A.Z., M.M. Kamal and S. de Cesare, 2013b. Electronic information sharing in local government authorities: Factors influencing the decision-making process. *Int. J. Inform. Manage.*, 33: 816-830.
- Bigdeli, A.Z., M.M. Kamal and S.D. Cesare, 2011. Inter-organisational electronic information sharing in local g2g settings: A socio-technical issue. Proceedings of the European Conference on Information Systems (ECIS'11), October 7-8, 2011, AIS Electronic Library, Atlanta, Georgia, pp: 1-12.
- Dawes, S.S., 1996. Interagency information sharing: Expected benefits, manageable risks. *J. Policy Anal. Manage.*, 15: 377-394.
- Estevez, E., P. Fillotrani and T. Janowski, 2010. Information sharing in government-conceptual model for policy formulation. Proceedings of the 10th European Conference on e-Government, June 17-18, 2010, National Centre for Taxation Studies and University of Limerick, Ireland, pp: 152-162.
- Garcia, J.R.G., C.A. Schneider, T.A. Pardo and A.M. Cresswell, 2005. Interorganizational information integration in the criminal justice enterprise: Preliminary lessons from state and county initiatives. Proceedings of the 38th Annual Hawaii International Conference on System Sciences, January 3-6, 2005, IEEE, New York, USA., ISBN: 0-7695-2268-8, pp: 118c-118c.

- Gil-Garcia, J.R., I.S. Chengalur-Smith and P. Duchessi, 2007. Collaborative e-government: Impediments and benefits of information-sharing projects in the public sector. *Eur. J. Inform. Syst.*, 16: 121-133.
- Gil-Garcia, J.R., S.A. Chun and M. Janssen, 2009. Government information sharing and integration: Combining the social and the technical. *Inform. Polity*, 14: 1-10.
- Hayes, B., 2008. Cloud computing. *Commun. ACM.*, 51: 9-11.
- Hrdinova, J., N. Helbig and C.S. Peters, 2010. Designing Social Media Policy for Government: Eight Essential Elements. Center for Technology in Government, Albany, New York,.
- Jing, F. and Z. Pengzhu, 2007b. A case study of G2G information sharing in the Chinese context. Proceedings of the 8th Annual International Conference on Digital Government Research: Bridging Disciplines and Domains, May 20-23, 2007, Philadelphia, PA., USA., pp: 234-235.
- Jing, F. and Z. Pengzhu, 2007a. What factors influence the information sharing across government agencies?. Proceedings of the 2007 IEEE International Conference on Service Systems and Service Management, June 9-11, 2007, IEEE, Chengdu, China, ISBN:1-4244-0884-9, pp: 1-4.
- Jing, F. and Z. Pengzhu, 2009. A field study of G2G information sharing in Chinese context based on the layered behavioral model. Proceedings of the 42nd Hawaii International Conference on System Sciences, January 5-8, 2009, Big Island, HI., USA., pp: 1-13.
- Jing, F., P. Zhang and D.C. Yen, 2014. G2G information sharing among government agencies. *Inform. Manage.*, 51: 120-128.
- Kamal, M.R., D.S. Singh, V. Singh and K. Ahmad, 2012. Factors influencing interdepartmental information sharing practice in electronic government agencies. Proceedings of the Knowledge Management International Conference, July 4-6, 2012, Johor Bahru, Malaysia, pp: 292-298.
- Kapur, D. and M. Crowley, 2008. Beyond the ABCs: Higher education and developing countries. Master Thesis, Center for Global Development, Washington, D.C., USA.
- Kim, Y.S., 2006. Challenges and barriers in implementing E-government: Investigation on NEIS of Korea. Proceedings of the IEEE 8th International Conference on Advanced Communication Technology, Volume 3, February 20-22, 2006, Phoenix Park, pp: 1635-1640.
- Kolekofski, K.E. and A.R. Heminger, 2003. Beliefs and attitudes affecting intentions to share information in an organization setting. *Inform. Manage.*, 40: 521-532.
- Kouzes, J.M. and B.Z. Posner, 2006. The Leadership Challenge. Vol. 3, John Wiley & Sons, Hoboken, New Jersey, ISBN:0-7879-5678-3, Pages: 464.
- Landsbergen, Jr. D. and G. Wolken Jr., 2001. Realizing the promise: Government information systems and the fourth generation of information technology. *Public Admin. Rev.*, 61: 206-220.
- Liu, L., Q. Li and P. Lu, 2011. A study of financial management information system construction in colleges and universities. Proceedings of the 2011 International Conference on Control, Automation and Systems Engineering (CASE'11), July 30-31, 2011, IEEE, Singapore, ISBN:978-1-4577-0859-6, pp: 1-3.
- Luna-Reyes, L.F., J.R. Gil-Garcia and C.B. Cruz, 2007. Collaborative digital government in Mexico: Some lessons from federal web-based interorganizational information integration initiatives. *Government Inf. Q.*, 24: 808-826.
- MHESR., 2010. National strategy for the development of higher education in Yemen. Ministry of Higher Education & Scientific Research, Yemen.
- Miskon, S., 2013. ICT shared services in the higher education sector: Foundations, benefits, success factors and issues. Ph.D. Thesis, Queensland University of Technology, Queensland.
- Mohammed, M.A., I. Huda and M.N. Maslinda, 2014. Electronic information sharing to improve decision making in public universities. *Asian J. Applied Sci.*, 2: 957-963.
- Pardo, T.A. and G.K. Tayi, 2007. Interorganizational information integration: A key enabler for digital government. *Govt. Inform. Quart.*, 24: 691-715.
- Pocatilu, P., F. Alecu and M. Vetrici, 2009. Using cloud computing for E-learning systems. Proceedings of the 8th WSEAS International Conference on Data Networks, Communications, Computers, World Scientific and Engineering Academy and Society (WSEAS), November 7-9, 2009, ACM, Baltimore, Maryland, ISBN: 978-960-474-134-2, pp: 54-59.
- Rong, J.X. and L.S. Cheng, 2010. The study on the influencing factors on information sharing and information quality. Proceedings of the 3rd International Conference on Information Management, Innovation Management and Industrial Engineering, November 26-28, 2010, IEEE, New York, USA., ISBN:978-1-4244-8829-2, pp: 57-61.



- Vicheth, S., 2012. Cambodia's higher education structure and the implications of the 2015 ASEAN economic community. *Ann. Dev. Rev.*, 3: 24-32.
- Yan, Z., B. Sun and T. Wang, 2009. A study on information sharing of e-government. *Proceedings of the IEEE International Conference on Grey Systems and Intelligent Services*, November 10-12, 2009, Nanjing, China, pp: 1331-1335.
- Yang, T.M. and T.A. Maxwell, 2011. Information-sharing in public organizations: A literature review of interpersonal, intra-organizational and inter-organizational success factors. *Govt. Inform. Quart.*, 28: 164-175.
- Yang, T.M., 2011. *Extending Current Theories of Cross-Boundary Information Sharing and Integration: A Case Study of Taiwan E-Government*. University at Albany, Albany County, New York, Pages: 333.