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# Exploring Net Benefits in the context of an E-Government Project

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**Abstract.** A typical e-Government project will undergo an impact assessment several times in its lifecycle. An important aspect of impact assessment is to measure benefits from the project, especially to the end-users. Often, when these benefits are measured, projects have positive scores, but when it comes to voluntary adoption of e-Government project on a large scale, the rate of adoption is slow. Not all the people who use it for the first time are willing to continue with the digital alternative. In this paper, we argue that one source of such contradictory findings is a unitary view of an important construct – benefits. In the extant literature, the construct – benefits - has been widely regarded as a single-dimensional construct. We propose that a multi-dimensional approach to measuring benefits will facilitate the respective government department to reach out to all the target audience with significant relative advantage. In order to identify the dimensions of benefits, we use the theory of Maslow's hierarchy of needs. Accordingly, we propose five dimensions of benefits which would cater to different kinds of individuals among the target users.

**Keywords:** Benefits, Conceptual Analysis, E-Government, Adoption.

## 1 Introduction

In the domain of e-Government, impact assessment has been an important area of concern for academicians and practitioners alike (Madon 2004; Bhatnagar & Singh 2010; De 2006; Lin, Fofanah & Liang 2011). Heeks (2008) advocates a five-step approach to assess an e-Government project - identify the stakeholders, identify each stakeholder's goals for the eGovernment project, measure the achievement of each goal, identify other impacts and finally classify the project outcome. The accuracy of each of the subsequent step is dependent on the preciseness of the previous step. The first step is relatively simple. In a typical e-Government project, leadership (political and bureaucracy), government employees, citizens, technology partners, vendors, businesses, and NGOs are some of the key stakeholders. The next step is challenging. For instance, not all citizens will have the same expectations from an e-Government project. Different members of the project leadership would also have different goals

from the project. Each member of this group may value one or more stated objective of the project. The challenge is to identify the goals for each group such that the goals of most of the members are reflected in the final list. In this paper, we attempt to create one such list of goals for one of the most important stakeholders - the citizens.

Most of the theories related to adoption/diffusion of information systems deal with expected benefits as a unified construct. In the Delone and McLean success model, the construct - net benefits follow the use of the system. Similar to the expected benefits in adoption literature, Delone's model also treats net benefits as a unified single construct. In this paper, we attempt to extend these theories by identifying dimensions related to expected benefits. We believe that the dimensions of net benefits will also be the same as that of expected benefits.

Citizens would seek a variety of benefits from a typical e-Government project. Savings in terms of time, cost, the effort could be a few most commonly desired benefits. However, not all the citizens would be satisfied with mere savings along these three dimensions. It is no surprise that when a group of citizens would be asked to evaluate benefits from an e-Government project on a scale of 1 to 5, some of them would choose each of these categories on the Likert scale. In this paper, we attempt to explain this variance with the help of Maslow's hierarchy of needs (Maslow 1943). We argue that citizens seek benefits from an e-Government project along each of the dimension of Maslow's hierarchy viz. physiological, safety, love/belonging, esteem and self-actualization.

This is a theoretical paper based on conceptual analysis as defined by Järvinen (1997). Future work will involve testing the hypothesis developed in this paper. The paper is structured as follows. We discuss the key theories on the adoption of information systems. These theories also form the basis of e-Government adoption literature. Based on this discussion, we highlight the gap in the extant literature. This forms the basis of our next section - the research question. It is followed by a brief discussion of the research method. It is followed by conceptual analysis and conclusion.

## **2 Literature Review**

In the domain of Information Systems, a popular research theme has been centred around the question of acceptance and adoption of digital systems and their continued use. In this context, several theories have been popular among researchers. Some of these theories have also borrowed from each other. In the following section, we briefly discuss five such theories.

According to the theory of reasoned action (TRA), individual behaviour in terms of use of an information system is determined by the behavioural intentions towards such a system. The behavioural intention is a function of an individual's attitude toward the behaviour and the prevalent subjective norms related to the same (Fishbein & Ajzen 1975). Among other factors that would influence the attitude towards the behaviour, expected benefits perceived by individuals would have a significant impact. However, this theory does not explicitly talk about expected benefits to the us-

ers. Theory of planned behaviour (TPB) is an extension of TRA. TPB adds a new construct - Perceived Behavioural Control - to the list of independent variables (Ajzen 1991). In the context of the information system, perceived behavioural control captures the individual's perception of the ease with which the new system can be used. To some extent, this would also capture the expected benefits from the new system. Similar to TRA, this theory also does not explicitly talk about expected benefits from the new information systems or from performing a particular behaviour. Technology acceptance model (TAM) is an adaptation of TRA to the field of Information Systems. In this model, the two independent variables are replaced by perceived usefulness and perceived ease of use (Davis 1989). Both these variables reflect some aspects of benefits to the end-users. This theory deals with all different kinds of benefits at an aggregate level. Variability of perception of expected benefits by the end-users has not been explored in this theory. We highlight this as one of the key gaps in the extant literature.

The next evolution in this domain was proposed by Venkatesh et al. (2003). This was an attempt to consolidate eight existing theories viz., the theory of reasoned action, technology acceptance model, motivational model, the theory of planned behaviour, a combined theory of planned behaviour/technology acceptance model, the model of PC utilization, innovation diffusion theory, and social cognitive theory. The consolidated model was termed as the unified theory of acceptance and use of technology (UTAUT). In this theory, the dependent variable remains same as TAM, but there is now a revised list of independent variables - performance expectancy, effort expectancy, social influence, and facilitating conditions - and four new moderating variables. In UTAUT, expected benefits are captured by performance expectancy and effort expectancy. In this paper, we argue that these two variables miss out on several possible dimensions of benefits from an e-Government project.

DeLone and McLean (1992) proposed information systems success model first in 1992 and later updated it in 2002-03. Updated Information Systems Success Model (DeLone & McLean 2002; DeLone & McLean 2003) has three independent variables - information quality, system quality and service quality - also termed as the quality triad. The theory highlights that benefits are accrued from the use of information systems. Use follows the intention to use, which in turn is impacted by the quality triad. An end-user may expect certain benefits from each of these dimensions of the quality triad of DeLone and McLean. For instance, better usability, extra availability, added reliability, more adaptability and superior response time are some of the potential expected benefits from an information system with greater system quality. Similarly, personalized content, complete information at one place, more crisp and relevant information, easy to understand data, and information security are some of the expected benefits from an information system with high information quality. Likewise, service quality would proxy the expected benefits related to the role of intermediaries, especially those dealing with the technical aspects of the solution. In this paper, we further explore these possible dimensions of the construct - net benefits - in the context of an e-Government project.

Most of the research that follows the above set of theories (like Prybutok et al. (2008); Bertot et al. (2008)) considers net benefits as a single unified construct. Consequently,

they fail to explain the variance in citizens' perception of an e-Government project. Some scholars have used alternative approaches to capture and classify benefits from e-Government projects. These approaches are equally divergent. In the following section, we attempt to demonstrate some such variations in capturing benefits from e-Government project.

Guo (2010) identifies four aspects of benefits from e-Government projects viz., 'democratization', 'environmental bonuses', 'speed, efficiency, and convenience' and public approval. Gilbert et al. (2004) have captured 'avoid personal interaction', 'control', 'convenience', 'cost', 'personalization' and 'time' as the major benefits from the e-Government projects. If we compare the above two approaches, only one-dimension overlaps, i.e. speed, efficiency, and convenience.

### **3 Research Question**

As discussed in the previous section, the dominant part of e-Government literature considers benefits as a single construct. Few researchers who have taken a more micro perspective at the benefits have introduced more dimension to the construct of benefits, but such efforts are far from standardization and lack theoretical grounding. Accordingly, we formulate the following research question.

Identify the key dimensions of benefits in the context of e-Government projects in India.

### **4 Research Method**

The key research method used in this paper is conceptual analysis as defined by Jarvinen (1997). According to this conceptual-analytical approach, earlier works in the form of constructs, models, theories are analyzed considering newer realities. Generalizations of earlier empirical studies are theorized in light of new assumptions of a certain part of reality. Similar work has been done by Ives, Hamilton and Davis (1980) to derive a comprehensive MIS research model from a review of extant literature. In this paper, we identify possible dimensions of benefits from the extant literature and further classify them based on the theory of Maslow's hierarchy of needs.

### **5 Conceptual Analysis**

In this paper, we argue that the use of Maslow's hierarchy of needs would facilitate understanding the variance in citizens' perceived benefits from an e-Government project. It would also help in unifying various approaches that were adopted to capture and classify net benefits.

According to Maslow's Hierarchy of Needs, individuals have five different levels of needs - physiological, safety, love/belonging, esteem, and self-actualization (Maslow 1943). We argue that the benefits from an e-Government project should correspond to each of these levels. Every individual has a varying degree of these five needs. Ac-

cordingly, he/she would seek different kinds of benefits from an e-Government project. We use extant literature to classify the benefits into each of these five levels.

Physiological needs in the context of e-Government could mean convenience and cost. Convenience is a perceived attribute (Chan, Thong, Venkatesh, Brown, Hu & Tam 2010). An end-user could perceive convenience in the use of an e-Government project because of ease of use (Berry, Seiders & Grewal 2002) as well as ease of access (Meuter, Ostrom, Roundtree & Bitner 2000). Several scholars have highlighted that convenience plays an important role in helping citizens choose the digital channel over the traditional ones (Torkzadeh & Dhillon 2002; Everett & Peirce 1993). Convenience would also mean some savings in the time required to avail the service. Cost savings through the use of e-Government would also be part of physiological benefits from such projects. Such savings would not only include the direct cost of application and intermediary fees but would also include a reduction in the time cost of availing the service.

Ashaye and Irani (2014) have identified improvement in the quality of service delivery as one of the key e-Government implementation benefits. Improvement of quality of service delivery may include service guarantee and service traceability. These benefits can be mapped as safety needs. Safety needs related benefits would also include safety of transactions, privacy controls and scope of grievance redressal with respect to the above concerns.

The third level in Maslow's hierarchy of needs is love/belonging. Such need of an individual can be satisfied by facilitating connectedness. In this context, connectedness would mean allowing end-users to interact amongst themselves beyond the e-Government transactions. Benefits under this category should also involve facilitating provision for avoiding personal interactions (Chan, Thong, Venkatesh, Brown, Hu & Tam 2010) especially with government employees (applicable for interactions which are often less pleasant).

Esteem, the fourth level of the hierarchy of needs include the desire for achievement, for adequacy, for confidence, for independence, and for prestige. Citizens who are early adopters of e-Government systems may achieve a sense of achievement, confidence and prestige (Rogers 2010). Some such users also become motivators and guides for the late adopters. Thus, the use of e-Government may improve the image of the end-user in the social network. E-Government features like personalization and 24X7 access will give users a sense of control and hence will help them fulfil their need for esteem.

Finally, the last level of needs - self-actualization - could be fulfilled by doing what one is capable of doing. One such aspiration is to contribute to the overall development of the society (at times the nation). The perception of contributing to the reduction in overall corruption in the society, to increase the transparency and fairness in the system, and to develop overall trust among the stakeholders may help in achieving the self-actualization needs of citizens.

Thus, we argue that benefits from an e-Government system can be classified along the five dimensions emerging from Maslow's Hierarchy of Needs. Since every individual can seek different degrees of each of these five types of needs, e-Government systems should be designed such that real benefits to the citizens are realized along all these

five dimensions. Such a system design would also reduce the variability in citizens' perceived net benefits. The above discussion has been captured in figure 1.

Thus, five propositions may be developed from the above argument.

1. Physiological needs related benefit would impact the use of the e-Government application.
2. Safety needs related benefit would impact the use of the e-Government application.
3. Belonging needs related benefit would impact the use of the e-Government application.
4. Esteem needs related benefit would impact the use of the e-Government application.
5. Self-actualization needs related benefit would impact the use of the e-Government application.

## 6 Conclusion

Most of the e-Government projects in India are focused on providing benefits along the first two dimensions (Berry, Seiders & Grewal 2002; Meuter, Ostrom, Roundtree & Bitner 2000). A few projects also provide benefits along the other three dimensions. However, benefits provided along the last three dimensions are more incidental than planned.

We argue that an e-Government project should be designed such that it provides significant benefits along all the five dimensions. The management mechanisms and the benefits listed under each of these dimensions are not exhaustive, but the dimensions themselves are exhaustive. Hence, executives and designers may focus on the five key dimensions while they plan for potential benefits to getting embedded in the new system. Two key contributions of this paper include first - identifying dimensions of net benefits in the context of the adoption of e-Government projects (DeLone & McLean 2003) and second – extending the theory of Maslow's hierarchy of needs (Maslow 1943) in the context of benefits derived from information systems project. The proposed framework is theoretical in nature. We intent to test the proposed model in our future work.

## 7 References

1. Ajzen, I. (1991). "The theory of planned behavior". *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
2. Ashaye, O. R., & Irani, Z. (2014). "E-government implementation benefits, risks, and barriers in developing countries: Evidence from Nigeria". *US-China Education Review*, 13.
3. Berry, L. L., K. Seiders, and D. Grewal (2002) "Understanding service convenience," *Journal of Marketing* (66) 3, pp. 1-17.
4. Bertot, J. C., Jaeger, P. T., & McClure, C. R. (2008, May). "Citizen-centered e-government services: benefits, costs, and research needs". In *Proceedings of the 2008 international con-*

- ference on Digital government research (pp. 137-142). Digital Government Society of North America.
5. Bhatnagar, S. C., & Singh, N. (2010). "Assessing the Impact of E-government: A Study of Projects in India". *Information Technologies & International Development*, 6(2), pp-109.
  6. Chan, F. K., Thong, J. Y., Venkatesh, V., Brown, S. A., Hu, P. J., & Tam, K. Y. (2010). "Modeling citizen satisfaction with mandatory adoption of an e-government technology". *Journal of the Association for Information Systems*, 11(10), 519-549.
  7. Davis, F. D. (1989). "Perceived usefulness, perceived ease of use, and user acceptance of information technology". *MIS Quarterly*, 13(3), 319-339.
  8. De', R. (2006). "Evaluation of e-government systems: Project assessment vs development assessment". In *Electronic Government: 5th International Conference, EGOV 2006, Kraków, Poland, September 4-8, 2006. Proceedings 5* (pp. 317-328). Springer Berlin Heidelberg.
  9. DeLone, W.H., and McLean, E.R. (1992). "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* (3:1), pp 60-95.
  10. DeLone, W.H., and McLean, E.R. (2002). "Information Systems Success Revisited," in: *Proceedings of the 35th Hawaii International Conference on System Sciences (HICSS 02)*. Big Island, Hawaii: pp. 238-249.
  11. DeLone, W.H., and McLean, E.R. (2003). "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems* (19:4), Spring, pp 9-30.
  12. Everett, J.W. and J. J. Peirce (1993) "Curbside recycling in the U.S.A.: Convenience and mandatory participation," *Waste Management & Research* (11) 1, pp. 49-61.
  13. Fishbein, M., & Ajzen, I. (1975). "Belief, attitude, intention, and behavior: An introduction to theory and research". Don Mills, Ontario: Addison-Wesley Pub. Co.
  14. Gilbert, D., Balestrini, P., & Littleboy, D. (2004). "Barriers and benefits in the adoption of e-government". *International Journal of Public Sector Management*, 17(4), 286-301.
  15. Guo, Y. (2010, August). "E-government: Definition, goals, benefits and risks". In *2010 International Conference on Management and Service Science* (pp. 1-4). IEEE.
  16. Heeks, R. (2008). "Success and Failure in eGovernment Projects". Retrieved from [http://www.egov4dev.org/success/techniques/self\\_assessment.shtml](http://www.egov4dev.org/success/techniques/self_assessment.shtml)
  17. Ives, B., Hamilton, S. and Davis, G.B. (1980), "A Framework for Research in Computer-Based Management Information Systems", *Management Science*, Vol. 26 No. 9, pp. 910–934.
  18. Järvinen, H.P. (1997), "The new classification of research approaches", in H. Zemanek (Ed.), *The IFIP Pink Summary-36 Years of IFIP*, IFIP, Laxenburg, available at: <http://www.ifip.org/36years/a51jarvi.html> (accessed 28 June 2019).
  19. Lin, F., Fofanah, S. S., & Liang, D. (2011). "Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success". *Government Information Quarterly*, 28(2), 271-279.
  20. Madon, S. (2004). "Evaluating the developmental impact of e-governance initiatives: An exploratory framework". *The Electronic Journal of Information Systems in Developing Countries*, 20(1), 1-13.
  21. Maslow, A. H. (1943). "A theory of human motivation". *Psychological Review*, 50, 370–396.
  22. Meuter, M. L., A. L. Ostrom, R. I. Roundtree, and M. J. Bitner (2000) "Self-service technologies: Understanding customer satisfaction with technology-based service encounters," *Journal of Marketing* (64) 3, pp. 50-64.



23. Prybutok, V. R., Zhang, X., & Ryan, S. D. (2008). "Evaluating leadership, IT quality, and net benefits in an e-government environment". *Information & Management*, 45(3), 143-152.
24. Rogers, E. M. (2010). *Diffusion of innovations*. Simon and Schuster.
25. Torkzadeh, G. and G. Dhillon (2002) "Measuring factors that influence the success of Internet commerce," *Information Systems Research* (13) 2, pp. 187-204.
26. Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). "User Acceptance of Information Technology: Toward a Unified View". *MIS Quarterly*, 27(3), 425-478.