

## Original Research Article

# Information Systems Infrastructure and Performance of New Kenya Cooperative Creameries Limited

Faith Mumbe Mukila<sup>1\*</sup>, Dr. David Nzuki<sup>2</sup><sup>1</sup>MIS-Candidate -Department of Management Science School of Business, Kenyatta University, Kenyatta university, Teaching Practise Centre, Main Campus, Kenya Drive, Nairobi, Kenya<sup>2</sup>Lecturer; Department of Management Science School of Business, Kenyatta University, Kenyatta university, Teaching Practise Centre, Main Campus, Kenya Drive, Nairobi, Kenya**Article History****Received:** 26.09.2022**Accepted:** 04.11.2022**Published:** 17.11.2022**Journal homepage:**<https://www.easpublisher.com>**Quick Response Code**

**Abstract:** The performance of significant number of organizations face challenges in achieving their organizational objectives due to the ever-changing technology. Some studies have been conducted that have yielding conflicting findings in regard to whether Information Systems impact positively or negatively on performance of business organizations. The aim of this study was to ascertain the effects of Information Systems (IS) on the performance of New KCC. The study was anchored on four theories; Technology Acceptance Model, Technology-Organization Environment, Information System success Model and Resource Based view. This current research utilized descriptive research design. The study used a target population of 200 employees selected from different departments: finance, logistics, human resource, crates section, sales & marketing, production, and ICT departments. This research employed stratified random sampling to obtain a sample size of 60 employees. The drop-and-pick method was utilized to administer the survey questionnaires used during the research at the New KCC. The results indicated that Information Systems infrastructure ( $\beta=0.832$ ;  $p=0.000$ ), significantly influenced performance of the New KCC respectively. In any organization, computer hardware and software are said to be very crucial organizational assets and should be properly managed appropriately. Specifically, infrastructure relating to hardware, software, and networks could greatly enhance the performance of the new KCC. The study recommends that computer hardware and software are thought to be extremely valuable organizational assets that should be used whenever possible hence firms needs to be fully equipped with well-functioning computers.

**Keywords:** Information Systems Infrastructure, Performance, New KCC.

**Copyright © 2022 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

The need to capitalize on and take advantage of the positive effects of ICT adoption and implementation in various businesses (efficiency, organization expansion, productivity growth, competitiveness) has been shown by theoretical and empirical studies (Dastane, 2020). Industrial firms with a technologically focused strategy promote a robust R&D department, the purchase of new technologies, and the employment of the most recent technologies, all of which boost exceptional turnovers and make it more difficult for competitors to replicate (Guo, Wang & Wei, 2018).

Wal-Mart is one of the companies that has been able to successfully integrate information systems into its operations. The information systems of the company aim at incorporating its business daily activities in order to improve conventional procedures that can be employed in its retailers all throughout the world. Wal-Mart use technology in all their business activities carried out daily (Alsharari, 2021).

In China, Informatization has always been an important part of national strategy. However, the level of Information System remains to be relatively low, comparing with that of developed countries, According to Jianping (2020).

In Kenya business organizations have improved their overall performance which is the main objective of every firm in operation and in order to achieve this objective suggests a requirement for the launch of Information Systems capability in the firm. Administrators in businesses have realized for several years that information technology and information are critical organizational resources (Murigi, 2017)

In organizations, Information systems is required mostly since it helps in performing at a high speed, giving high volumes of output, providing fast and accurate communication as well as collaboration of employees within different departments. In the year 2008 New KCC embarked on using IS to ensure proper flow of work and deliveries to the market is made easier and at minimal errors. Modern shift in business operations has brought about a swift change in Information Management Systems (IMS) practices in operating enterprise as a result, organizations, as opposed to traditional enterprises, have become knowledge driven.

Also, the research done by Siro (2014) revealed that Because ICT is an essential asset in creating a low medium for scanning, acquiring, and exchanging information, its effectiveness is a rationale of proper equipment. In current dynamic as well as competitive ecosystems, it's nearly impossible for corporations to function efficiently devoid of a steadfast ICT infrastructure system in place.

Kenya Co-operative Creameries (KCC) has a long and distinguished tradition reaching back to colonial times. New KCC has been a huge success, as milk prices paid to farmers have increased significantly, the company has provided dividends to the Treasury, and the industry has grown significantly. A successful New KCC is critical for sector stabilization and, indirectly, for influencing the payment of better prices to farmers

## STATEMENT OF THE PROBLEM

Organization's performance has continuously been vital and significant concern worldwide, for both public and private sectors. The New KCC was generating manual documents to its customers which made it difficult to trace, customers were not satisfied and also the performance was bad since there were no documents to be accounted for, the errors were too much and speed slowed. Although being renationalized and repurchased by New KCC in 2003, the company did not perform as promised (Ndolloh, 2016). ICT adoption has positive impacts on business performance in increasing productivity as stated by Kuffour (2018). The research done by Mugo *et al.*, (2018) who investigated on how the implementation of ICT impacts the effectiveness of SMEs and found that there was need for ICT application to be made simple for the users and also to offer training and technical support.

According to Babaei and Beikzad (2013) a large majority of businesses lack proper information systems, therefore managers should invest in Information Systems solutions and incorporate the same into project management. Therefore, this current research pursued to determine the influence of IS capability on the performance of New KCC.

## Research Objective

To determine the effect of information systems infrastructure on the performance of New KCC.

## LITERATURE REVIEW

### Theoretical Review

The research was founded on the following theories:

### 2. 1 Technology Acceptance Model

The technology acceptance and usage has become very crucial and vital in every business today. After the advent of information systems into businesses, Davis (1986) created TAM in the information technology area to perceive utility and simplicity of use. TAM was modified to the Extended Technology Acceptance Model (TAM2) by Venkatesh and Davis (2000) so as to explain perceived utility and ease of use from the perspectives of social impact and cognitive instrumental mechanisms. The Technology Acceptance Model in an organization helps managers from top, middle and low level managers and also decision makers within the organization to assess the technology introduction success to the organization motivating users to accept the systems.

According to Kim and Crowston (2011) this model describes how people's attitudes toward technology evolve with time as they learn how to use the technologies in question. The users adopt the technology as well as change the outdated software and hardware which cannot support the new technology. Businesses today relies more on new and modern technology to be able to achieve better performance since the focus and content of IT strategy leads to business strategy which makes firms able to withstand any challenge in the modern technology. This model informs two measures that is the usefulness, the ease of use and attitude towards use. Due to changing technology users may develop attitudes in trying to adopt to the changes. Perceived usefulness being vital element in the use of technology as deemed in the organization by customers and users.

Consumers are more expected to adopt technology or innovation if they consider that it makes their lives easier Lowe *et al.*, (2019). Researchers has been using TAM worldwide so as to understand and be able to explain user behavior in an information system as well as the acknowledgement of various varieties of information systems. Sheppard *et al.*, (2019) recounted that by manipulating the concept of perceived ease of use and usefulness, software engineers can gain a

clearer understanding of users' perceptions of the software system and therefore forecast their behavioral intentions and actual usage. It makes a significant theoretical addition to our knowledge of how people use and accept information systems. Consequently, academicians have utilized the TAM to help analyze the appropriations of different knowhows by users with relations to the field of ICT. TAM has thrived well in the robust model provision which is applied to the end-user computing technologies across a broad range.

### 2.2.2 Technology-Organization-Environment Model

According to Tornatzky and Fleischer (1990), innovative acceptance is influenced by organizational, technological and environmental aspects. A variety of study findings, such as Scott (2007); Borgman, Heier, Schewski, Bahli (2013); Ifinedo (2011), have employed the concept in the technology acceptance practice. In addition, the concept takes into account the three variables namely: organizational factors, characteristics of technology and macro-environmental elements (Gacheri, 2018). Additionally, Ifinedo (2011) discovered in his research grounded on the Technology-Organization-Environment (TOE) framework that characteristics such as organizational readiness, perceived cost of installing ICT, financial resources and top administration support impacts e-business acceptance and utilization in organizations. The model takes three perspectives into consideration that have an influence on ICT acceptance: technological, environmental, and organizational.

Institutional perspective is critical in determining adoption and implementation of a given technology. For example, firm size, administrative framework complexity, and managerial support are all factors to consider. Executives may help the business expand by improving and agreeing on a transparent picture of the organization's aspirations, strategies, and fundamental values, as well as supporting consistent internal and external ICT interactions. Therefore, the TOE concept are important to the investigation because they can identify the study's independent variables. Managerial support, Application services, and ICT infrastructure are among them.

### 2.2.3 Information Systems Success Model

Ephraim R. McLean and William H. DeLone founded this idea in 1992, and the original authors revised it in 2003. The Information Systems Success Model (ISSM) is a theory of information systems that aims to stipulate a all-inclusive comprehension of information system success by recognizing, detailing, and elucidating the associations amongst six of the utmost important domains of achievement along which information systems are primarily assessed: quality of service, quality of information, quality system, user fulfillment, network system benefits and system use/usage intentions as revised by DeLone and McDonnell.

As it pertains to this model, an information system can be analyzed in regard to the quality of the service, the information as well as the quality of the system. These thereafter determines the use of the system, user intentions, targeting user satisfaction and the benefit obtained from the system deployment. The Net benefits gotten from the system usage influences user satisfaction either in a negative way or positive way. The performance of organizations and its capability to tolerate competitive powers in business environment relies on the range to which IS usage is deployed. As a consequence, the successful execution of IS has long been a topic of discussion in the IS sector (Delone & McLean, 2016).

### 2.2.4 Resource Based- View Theory

The theory of the resource-based perspective (RBV) is a governance framework for assessing which strategic resources an organization might employ in the long run to acquire a competitive advantage. Research by Penrose (1959), in which she emphasizes untapped management infrastructure as the key driver of growth, sparked the development of the theory. To resolve the drawbacks of ecological concepts of comparative advantage, The resource-based view is a notion that is presented by Barney (1991) which seeks to include a linkage between the strategic or competitive advantage enjoyed by a company, the heterogeneous resources owned by an establishment and resource mobility within a particular industry. The chief idea behind the concept is that the organization should rather concentrate with the resources and the potentiality already available within the organization than majoring at the business environment competition so as to get a great market share or on the threats from the other competitors in the market. According to RBV, exploiting new prospects by utilizing competencies and resources that are readily accessible within the organization is far much easier, rather than acquiring skills which are new, the characters or functions for each different opportunity. Physical assets such as financial, human, and administrative, intangible capitals such as the institution's position, reputation and socio-cultural aspects, and; and finally, organizational capabilities such as core competencies, collective learning, alliance formation, networking, technology, skills, capacity to make strategic decisions, long-term relationships and information abilities, just to name a few (Albertini, & Berger-Remy, 2019).

## EMPIRICAL REVIEW

### 2.3.1 IS Infrastructure and performance

It is understood that businesses cannot operate effectively without a reliable and efficient ICT infrastructure system. For IS services and products to be delivered and made available to consumers with the required reliability and availability, the condition of the IS infrastructure is essential (Jang-Jaccard & Nepal, 2014). In another study, Ab Wahab, *et al.*, (2020) discovered that ICT is essential for boosting a

company's productivity, improving the accuracy and efficacy of its staff, and enhancing the perceived value of the corporation in their study on ICT considerations in Nairobi metropolitan. Therefore, it is the responsibility of New KCC to make sure that the IS infrastructure is constantly enhanced.

According to Nyaggah (2015) who conducted research on the adoption of ICT infrastructure to business organizations and came to the conclusion that the ICT infrastructure is one of the key variables influencing the adoption of ICT to any business. According to Bahari and Mahmud (2018), system quality has a positive and considerable impact on both individual performance and the performance of the company.

An IT infrastructure can serve as the cornerstone upon which a business can base reliable services thanks to a coordinated and well-organized basic information system. Due to the fact that it uses shared technological resources, information technology (IT) infrastructure enables the company's specialized information system applications to function on a platform. According to Mitchell *et al.*, (2012), the main function of an IT network infrastructure is to manage and coordinate the roles in charge of various technical activities.

The choice and application of computer hardware and software has a significant impact on the success of an organization. Computer hardware and software are considered to be extremely important organizational assets and should be managed properly in any firm. IT, which is integral to the daily operations

and management of enterprises, is made up of hardware, software, and communication networks.

Pakurár *et al.*, (2019) assert that the reliability and availability with which IS services and products are communicated and made available to customers depends critically on the state of the IS infrastructures. Universities must therefore make sure that the IS infrastructure has a continuous upgrade program in place. It is necessary to facilitate and acknowledge that employees inside the company have access to computers; this, together with connection dependability, gives users confidence while working with and using IS solutions.

## RESEARCH METHODOLOGY

This current research utilized descriptive research design. The study used a target population of 200 employees selected from different departments: finance, logistics, human resource, crates section, sales & marketing, production, and ICT departments. This research employed stratified random sampling to obtain a sample size of 60 employees. The data were compiled through a tailored questionnaire with closed-ended and open-ended questions in the gathering of primary data.

## RESULTS AND DISCUSSIONS

The research's primary objective was to ascertain the effect of information systems infrastructure on the performance of New KCC. The Standard deviations, means, and percentages were used in the descriptive analysis.

**Table 1: The effect of IS infrastructure on the performance of New KCC**

Statement	SD	D	N	A	SA	Mean	SD
Hardware components are done troubleshooting regularly to ensure effectiveness	7.5%	18.9%	20.8%	39.6%	13.2%	3.32	1.15
Software of this organization is updated according to modern technology	11.3%	15.1%	3.8%	50.9%	18.9%	3.50	1.28
The organization network is available and uninterrupted which is fast and quick in respond	13.2%	13.2%	26.4%	24.5%	22.6%	3.30	1.32
Respond time for fixing problems is instant	15.1%	11.3%	18.9%	34.0%	20.8%	3.33	1.34
The offices in the organization are fully equipped with well-functioning computers	5.7%	20.8%	15.1%	49.1%	9.4%	3.35	1.09

Computer hardware and software are regarded as very important organizational assets in every firm and should be maintained carefully. The study revealed that 52.8% of respondents agreed that hardware components are done troubleshooting regularly to ensure effectiveness (Mean=3.32;SD=1.15). This finding were confirmed by 69.8% of those who agreed that software of the organization was updated according to modern technology. This implies that when infrastructure Information system is continually improved, performance will be attained. The finding agreed with that of Pakurár *et al.*, (2019) who studied

that the state of the IS infrastructures is critical in ensuring that IS services and products are transmitted and made available to users with the required availability and reliability. Consequently, funds are required to purchase, service, maintain, and update ICT facilities, among many other operations.

It is well accepted that the cornerstone for communications is IT infrastructure. The study primarily found that 58.5% of respondents agreed that the offices in the organization were fully equipped with well-functioning computers while 26.5% disagreed with



the statement. This conclusion reverberates with Silva and Lima's (2018) contention that businesses must invest in IT components including the Internet, office automation, and management information systems in order to attain high productivity and efficacy. In order to adapt HRM practices that are crucial to the mission and objectives of the business, human resource specialists must assess opportunities in the social, economic, political-legal, and technological settings.

Information technology (IT) infrastructure enables the firm's specialized information system applications to run on a platform since it is the shared technology resources. However, 26.4% disagreed that the organization network was available and uninterrupted which is fast and quick in respond. This view was supported by 36.5% of respondents who also

disagreed that respond time for fixing problems was instant. This implies that lack of sustainable network could impede firms' successful operation. This outcome was consistent with that of Hayudini (2022), who stated that having a good IT infrastructure guarantees the security of the organization's internal processes as well as the consistency of information transfer. As a consequence, the role-based management of diverse technological operations is the purpose of IT network infrastructure.

**4.6 Correlation Analysis**

In an attempt to measure the nature and strength of the relationship between information systems infrastructure and performance, Pearson correlation analysis was used. Table xx shows the results.

Correlations		
		Performance of New KCC
Information Systems Infrastructure	Pearson Correlation	.882**
	Sig. (2-tailed)	.000
	N	53
**. Correlation is significant at the 0.01 level (2-tailed).		

The results revealed that there was evidence of a correlation with statistical significance between Information Systems Infrastructure and performance of new KCC ( $r=0.882^{**}$ ;  $p<0.05$ ). This suggested that provision of infrastructure related to hardware, software and network could significantly improve effectiveness of new KCC. The results was steady with that of Otieno (2015) who reiterated that ICT adoption and use by SMEs were positively impacted by how valuable enterprises viewed it to be. ICT solutions were more likely to be adopted by SMEs when they could quickly

quantify the advantages to their bottom line, increase productivity, and reduce operating costs.

**4.7 Regression Analysis**

Regression analysis, a statistical technique for forecasting the outcome of a dependent variable, makes use of a number of explanatory factors.

To determine the impact of the information systems infrastructure on the effectiveness of the New KCC, linear regression was used in this study.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.882 <sup>a</sup>	.778	.774	.47515
a. Predictors: (Constant), IS Infrastructure				

The adjusted R square suggested that 77.4% in the variation in performance of new KCC could be elucidated in terms of Information system

infrastructure. The study similarly showed that 22.6% remained to be unexplained variation which could be explicated by other variables.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	40.426	1	40.426	179.059	.000 <sup>b</sup>
	Residual	11.514	51	.226		
	Total	51.940	52			
a. Dependent Variable: Performance of New KCC						
b. Predictors: (Constant), IS Infrastructure						

The study displayed that the model for the research was significant at 0.05 alpha level,  $r^2 = 0.778$ ,  $F(1,51) = 179.059$ ;  $p < 0.05$ . This suggested that

information system infrastructure is substantial factor in predicting performance of new KCC.

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.572	.219		2.612	.012
	Information System Infrastructure	.832	.062	.882	13.381	.000

*a. Dependent Variable: Performance of New KCC*

The results indicated that information system infrastructure ( $\beta=0.832$ ;  $p=0.000$ ) significantly impacts performance of New KCC. This implies that when firms' performance is increased by one unit, information system infrastructure increases by 0.832 units.

## CONCLUSION

In any organization, computer hardware and software are said to be very crucial organizational assets and should be properly managed appropriately. Specifically, infrastructure relating to hardware, software, and networks could greatly enhance the performance of the new KCC.

## REFERENCES

- Ab Wahab, N. Y., Mohamad, M., Yusuff, Y. Z., & Musa, R. (2020). The importance of ICT adoption in manufacturing sector: empirical evidence on SME business performance. *International Journal of Supply Chain*, 9(2), 268-272.
- Albertini, E., & Berger-Remy, F. (2019). Intellectual capital and financial performance: A meta-analysis and research agenda. *M@ n@ gement*, 22(2), 216-249.
- Alsharari, N. M. (2021). Management Accounting Practices and E-Business Model in the US Walmart Corporation. *Accounting and Finance Innovations*, 3.
- Babaei, M., & Beikzad, J. (2013). Management information system, challenges and solutions. *European Online Journal of Natural and Social Sciences: Proceedings*, 2(3), 374-381
- Bahari, A., & Mahmud, R. (2018). Impact of system quality, information quality and service quality on performance. In 34th Annual Computer Security Applications Conference, 3(2), 1-6.
- Barney, J. B. (1991). 'Firm resources and sustained competitive advantage'. *Journal of Management*, 17, 99-120.
- Borgman, H. P., Bahli, B., Heier, H., & Schewski, F. (2013). "Cloudrise: Exploring Cloud Computing Adoption and Governance with the TOE Framework," in HICSS 2013: 46th Hawaii International Conference on System Sciences, Wailea, HI, USA, January 7-10.
- Dastane, D. O. (2020). The impact of technology adoption on organizational productivity. *Journal of Industrial Distribution & Business*, 11(4), 7-18.
- Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems: theory and results. Doctoral dissertation. MIT Sloan School of Management, Cambridge, MA.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9-30.
- DeLone, W. H., & Ephraim, R. M. (2016). Information systems success measurement. *Foundations and Trends® in Information Systems*, 2(1), 1-116.
- Gacheri, N. M. (2018). The Effects of organizational culture on the adoption of technology: a study of multinational corporations in Nairobi (Doctoral dissertation, Strathmore University).
- Guo, B., Wang, J., & Wei, S. X. (2018). R&D spending, strategic position and firm performance. *Frontiers of Business Research in China*, 12(1), 1-19.
- Ifinedo, P. (2011). An empirical analysis of factors influencing Internet/e-business technologies adoption by SMEs in Canada. *International Journal of Information Technology & Decision Making*, 10(4), 731-766.
- Hayudini, M. A. (2022). Network Infrastructure Management: Its Importance to the Organization. *Natural Sciences Engineering and Technology Journal*, 2(1), 79-84.
- Jang-Jaccard, J., & Nepal, S. (2014). A survey of emerging threats in cybersecurity. *Journal of Computer and System Sciences*, 80(5), 973-993.
- Jianping, Z. (2020). Strengthen the structural transformation of the Belt and Road partner countries: Global value chain integration and upgrade. United nations conference on trade and development.
- Kim, Y., & Crowston, K. (2011). Technology adoption and use theory review for studying scientists' continued use of cyber-infrastructure. *Proceedings of the American Society for Information Science and Technology*, 48(1), 1-10.
- Kuffour, S. (2018). The impacts of ICT on Modern World Business: A Case Study of K. Logistics. Munich: GRIN Verlag.
- Lowe, B., Dwivedi, Y. K., & d'Alessandro, S. (2019). Consumers and technology in a changing world. *European Journal of Marketing*, 53(6), 1038-1050.
- Mitchell, I. J., Gagne, M., Beaudry, A., & Dyer, L. (2012). The Role of Perceived Organizational Support, Distributive Justice and Motivation in

- Reactions to New Information Technology, Computers in Human Behaviour, 28, 729–738
- Mugo, D. M., Muathe, S. M. A., & Waithaka, S. T. (2018). Effect of Mobile Communication Services on Performance of Saccos in Kenya. *European Scientific Journal*, 14(30), 46-62.
  - Murigi, G. N. (2017). Information Technology Security Practices and Performance of Small and Medium Enterprises in Nairobi County, Kenya. Unpublished MBA Thesis, Kenyatta University.
  - Ndolloh, K. O. (2016). Response strategies adopted by co-operative insurance company (Cic) group limited to changes in the external environment (Doctoral dissertation, University of Nairobi).
  - Nyaggah, H. K. (2015). Factors influencing adoption of information and communications technology in public hospitals in Nairobi County, Kenya (Doctoral dissertation, University of Nairobi).
  - Otieno, A. P. (2015). Factors influencing ICT adoption and usage by small and medium sized enterprises: the case of Nairobi based SMEs (Doctoral dissertation, United States International University-Africa).
  - Pakurár, M., Haddad, H., Nagy, J., Popp, J., & Oláh, J. (2019). The service quality dimensions that affect customer satisfaction in the Jordanian banking sector. *Sustainability*, 11(4), 1113.
  - Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley.
  - Sheppard, M., & Vibert, C. (2019). Re-examining the relationship between ease of use and usefulness for the net generation. *Education and Information Technologies*, 24(5), 3205-3218.
  - Scott, J. E. (2007). "An e-Transformation Study Using the Technology–Organization Environment Framework," in 20th Bled eConference, eMergence: Merging and Emerging Technologies, Processes, and Institutions, Bled, Slovenia, June 4-6.
  - Silva, M. S. A. E., & Lima, C. G. D. S. (2018). The role of information systems in human resource management. *Management of Information Systems*, 16, 113-126.
  - Siro, D. (2014). The effect of ICT application on communication efficiency in the ministry of education, science and technology (Doctoral dissertation, University of Nairobi).
  - Tornatzky, L. G., & Fleischer, M. (1990). *The Process of Technology Innovation*. Lexington: Lexington Books.
  - Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204.

---

**Cite This Article:** Faith Mumbe Mukila & David Nzuki (2022). Information Systems Infrastructure and Performance of New Kenya Cooperative Creameries Limited. *East African Scholars J Econ Bus Manag*, 5(10), 353-359.