ENTERPRISE RESOURCE PLANNING SYSTEM AND CUSTOMER SATISFACTION: A SURVEY OF PUBLIC UNIVERSITIES IN SOUTH RIFT REGION, KENYA

Korir Kiprono¹, Dr. Williter Rop², Dr. Lydia Langat³

Abstract: Corporate world is changing its way of doing business regionally and globally, Learning institutions worldwide have realized the need for prompt communication with their stakeholders. In the past there has been a problem in the way business processes were relating, hence there is a need for integrating them to enable faster execution of organizational functions. Universities in Kenya and beyond have seen the need for full implementation of enterprise resource planning system to address promptness in sharing data. This study sought to assess the effectiveness of student management module of Enterprise resource planning system (ERP) on customer satisfaction in Public universities in Kenya South Rift Region. The target population was 192 ERP users of Public universities in South Rift Region where a 85 response was erecived. Purposive sampling was employed followed by stratified sampling technique. The research employed descriptive survey design where adat was collected using structured questionnaires. Data collected from the research study was analyzed using descriptive statistics. The study recommends that universities should; develop a system where students access their academic information such as transcripts, fees balances, units registration and all correspondences online; fully embrace biometric identification of students so as to weed out imposters; develop an Online Student application and student registration an trained all employees on ERP system.

Keywords: customer, customer satisfaction, Enterprises Resource Plannning System, student management module.

1. INTRODUCTION

An Enterprise Resource Planning (ERP) system is an information communication technology (ICT) platform which integrates different functional modules like financial, customer relationship management, human resources, accounting, supply chain, which forms an information system provided by software vendors to ensure different business processes are integrated for the smooth flow of information through a company. Enterprise Resource Planning is a software solution that integrates all business processes and functions so as to give the institutional comprehensive view of business from a centralized ICT platform (Al-Mashari, 2003). Firms which have embraced the use of ERP are very competitive in the market place because of efficient business processes.

The use of ERP in public universities has promoted the general performance. There are many contributions gained through the use of ERP, among them are ;sharing of information, time reduction to complete processes, helps meet the complex needs of the customers through customization. The functions are reconfigured to accommodate the changing needs of the users (Dang, 2008). ERP system optimize information system processing technologies and intergrate different data from different workstations into a single database where the transactions are auto generated, recorded and kept safely for the future reference. In addition, ERP reduces the cost and improve the business processes (Harris, 2006). It allows the control of many resources that are used so as to deliver satisfactory services to stakeholders.

ERP helps institutions to incorporate processes, functions and the relevant organizations data (Delgado, 2006). When business processes are linked together the institutions gain by reducing the time to collect data, minimize minimal duplication of data, timely and available information management makes prompt and faster informed decision with good quality. As well as it boosts communication within. Hindrances are lowered between different business processes and departments on the fact that ERP is an ICT platform that helps in integrating the various business functions across all the sections in the corporate sectors. ERP system has promoted the interconnections and corporations' with stakeholders and its responsiveness to the changing market and the needs of the customers. Enterprise Resource Planning systems availability has improved the work procedures and processes by properly managing for its success.

1.1 Statement of the Problem

In today's competitive market, institutions have to adapt into the continuously changing and evolving conditions in order to offer quality service to its customers. However most of the learning institutions have not adequately embraced ERP to ensure Customer Satisfaction. The universities have always faced the challenges related to an array of service quality factors that are important for customers, including: timeliness and convenience, personal attention, reliability and dependability, employee competence and professionalism, empathy, responsiveness, assurance, availability, and tangibles such as physical facilities and equipment. However, despite the implementation of Enterprise Resource Planning in public universities in Kenya, there are myriads of challenges inhibiting its success. The most common challenges faced by universities are missing marks, time tabling, poor performance appraisal, ineffective student's clearance procedure, ineffective preparation of graduation list and improper records keeping. Thus there is need to establish the effectiveness of student management module on customer satisfaction in Public universities.

2. EFFECTIVENESS OF STUDENT MANAGEMENT MODULE ON CUSTOMER SATISFACTION

Student Information Management System (SMM) is a set of well-coordinated activities and procedures for handling different functionalities like capturing, storing, processing and use of information by the students for a common objective. SMM helps in coordinating different functions, actions, entity procedures and the system attributes for achieving a desired goal and making informed decisions. Simon (2008), commented that integrating different parts to be complete, having different entities relating to one another. In addition, Koontz (2005) described the importance of bringing collaboration amongst different parts of the whole system aiming at unity in the environment for which it is intended. For instance, the integration of SMM aims at achieving unity of efforts among the various subsystems for effective and sustainable record keeping in global Universities. Indeed, SMM unifies information system and coordinates student data within the environment as software solution for educational establishments managing student information. SMM are categorised in to different size, types, capability and scope from application packages that are executed in comparatively small institutions to only cover the students records to the business widespread solutions which aims to cover a lot of features on multi-campus institutions with important local obligation. Most systems are modified to various levels of functionality by procuring add-on "modules" and can be configured by their home organisations to meet the local needs.

According to Kasozi (2006) some of the importance of SMM is the provision of a platform for accurate storage of information, timely and professionally manner. Computer based systems in universities have been universally accepted because it performs crucial operations as far as the students data is concerned for example enrolments, sessions reporting, admissions, nominal rolls and biometric identifications.

The information included normally in SMM are students information coordination, maintaining and capturing of students data, online access (24/7) of information to all users and stakeholders (parents, students and instructors) and Recording biometrics. He also said SMM has the capabilities to solve issues like academic progression, new students enrolment, admissions process, prospective student's inquiries, assessments, automatic creation of teacher & class schedules, absence, maintaining discipline records, grades and attendance, maintenance of records and the recording of communications with students. Though the benefits of information system on students management have greatly improved the efficiency and reliability in the universities, there are challenges on the implementation of ERP in universities. According to Abugabah & Sanzogni, (2010), 60% - 80% of higher education institutions' implementation of ERP has failed to meet their goals and objectives and stakeholders were not satisfied with the outcomes. Even with offering the ability to customize the ERP system in order meet university's objectives, customization itself poses a risk of failure due to high cost and scope changes (Seo, 2013).

3. RESEARCH DESIGN

The study employed descriptive survey design. According to Mugenda & Mugenda (2003), a descriptive survey design is an attempt to collect data from members of the population in order to determine the current status of that population with respect to one or more variables and report the way things are. Similarly, according to (Kerlinger 1978, Kombi and Tromp, 2006) cited in Onchera & Manyasi (2013), the use of descriptive design is useful for educational fact findings because they provide a great deal of information. The target population were 639 respondents who were ICT personnel, finance, administrative staff, student leaders, academic staff, registry staff, library staff and accommodation employees in Public universities. Using purposive sampling, the researcher selected respondents in the ICT Department, Examinations, Registry, Administration Unit, and Accommodation Department, Finance, Registry and human Resource department making a total of 85. Data was collected using a structured questionnaire which constructed as per the study objectives.

4. FINDINGS

Table 1: Descriptive Statistics on Student Management Module

	N	Mean	Std. Dev
There is Accurate storage of information	85	3.4471	1.45983
There is Timely and high professionalism	85	3.3294	1.43418
Effective Capturing, maintenance and coordination of student data	85	3.3059	1.44769
Access to online information to students	85	3.1882	1.40995
The university has adopted biometric identification	85	1.8235	1.02558
Managing record of absence and discipline records has been automated	85	2.4471	.85225
Effective Customer inquiries	85	2.4824	1.26878
Valid N (listwise)	85		

Source: Research Data (2019)

Table 1 reveals that there was incomplete storage of information in the university student's management system since it had had a mean of 3.45 and standard deviation of 1.45. There was untimely and non high professionalism on the way student's information was handled since it had a mean of 3.33 and standard deviation of 1.43. Capturing, maintenance and coordination of student data was not effective since it had a mean of 3.31 and standard deviation of 1.45. Access to online information to students was not available since it had a mean of 3.18 and standard deviation of 1.41. Biometric identification had not been adopted by the university since it had a mean of 1.82 and standard deviation of 1.02. Management of absenteeism records and disciplinary records had not been automated since it had a mean of 2.45 and standard deviation of 0.85 and the channels used for customer inquiries was ineffective since it had a mean of 2.45 and standard deviation of 1.27.

This implies that there was no accurate storage of information; the information was not timely and lacked high professionalism; capturing, maintenance and coordination of student data was not effective; access to online information to students was not available; biometric identification of students had not been adopted; managing record of absence and discipline records had not been automated and that customer inquiries channels was not effectives. According to Abugabah & Sanzogni, (2010), 60% - 80% of higher education institutions' implementation of ERP has failed to meet their goals and objectives and stakeholders were not satisfied with the outcomes. Even with offering the ability to customize the ERP system in order meet university's objectives, Overcustomization of the system poses a risk of failure due to high cost and scope changes (Seo, 2013).

5. SUMMARY AND CONCLUSION

The study found out that the student management module information was not accurately stored; the information was not timely nor done professionally; the capturing, maintenance and coordination of student data was not effective; access to online information to students was not reliable; biometric identification of students had not been adopted; management of absence and disciplinary records had not been automated and that customer inquiries channels were not effective.

The student's information need to be done in professional manner so as to enable easy retrieval and management of students. The students should be able to access their academic information such as transcripts, fees balances, units registration and all correspondences online. The universities need to fully embrace biometric identification of students since it will be difficult to manually identify students especially during examination so as to avoid imposters who are not authorized to sit for the set exams.

The study recommends that universities should develop a system where students access their academic information such as transcripts, fees balances, units registration and all correspondences online. The universities should fully embrace biometric identification of students so as to weed out imposters. Universities should develop an Online Student application and student registration in order to enhance service delivery. There is need to regularly have all employees and students trained on ERP system use and that when new modules are intergraded all employees need to be trained on how to use it.

Further research can be done in the other organizations even industries because dimensions of customer satisfaction are case dependent.

REFERENCES

- [1] Ahmed E., & Moutaz, H. (2012). The Future of ERP Systems: Look Backward before Moving Forward, Published by Elsevier Ltd. Available online at: www.science direct.com, Procedia Technology.
- [2] Algeo, M. E. A, & Barkmeyer, E. J. (2012). An Overview of Enterprise Resource Planning in Manufacturing Enterprise. Chapter 999, National Institute of Standards and Technology.
- [3] Al-Mashari, M., Al-Mudimigh, A., & Zairi, M. (2003). Enterprise Resource Planning: A Taxonomy of Critical Factors. *European Journal of Operational Research*.
- [4] Ayyagari, R.A. (2010). Hands-on ERP Learning: Using Open ERP, an Alternative to SAP. *Journal of Information Systems Education*, 22(2).
- [5] Barney, J. B. & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource based view. *Strategic Management Journal*, 25(1), 23-37.
- [6] Beaubien, L. (2013). Technology, change, and management control: a temporal perspective. *Accounting, Auditing & Accountability Journal*, 26(1), 48-74.
- [7] Beverley, H., Elizabeth. O. & Kate, W. (2009). An Introduction to Qualitative Research. Birmingham, UK: Yorshire and Humber.
- [8] Bloom, N. & John, V. R. (2010). Why Do Management Practices Differ Across Firms and Countries? *Journal of Economic Perspectives*, 24(1), 203-24.
- [9] Bloom, N. & John, V. R. (2007). Measuring and Explaining Management Practices Across Firms and Countries. *The Quarterly Journal of Economics*, 122(4), 1351-1408.
- [10] Bogdan, R. C., & Biklen, S. K. (2003). *Qualitative Research of Education: An Introductive to Theories and Methods* (4th ed.). Boston: Allyn and Bacon.
- [11] Bromiley, P. & Fleming, L. (2002). The resource-based view of strategy: A behavioral critique. In M. Augier & M. J. G (Eds.), *In Change, Choice and Organisation: Essays in Memory of Richard M Cyert.* Cheltenham, UK: Edward Elgar.
- [12] Burnson, F. (2016). *7 Little-Known Benefits of ERP Systems*. Retrieved from Software Advice: http://www.softwareadvice.com/resources/7-little-known-erpbenefits/.
- [13] Chapman, C., & Kihn, L. (2009). Information system integration, enabling control and performance. *Accounting Organizations & Society, 34*.
- [14] Chen, I. J. (2011). Planning for ERP Systems: Analysis and Future Trend. *Business Process Management Journal*, 7(5).
- [15] Clarke, R. J. (2006). Research Models and Methodologies. HDR Seminar Series.

- International Journal of Recent Research in Commerce Economics and Management (IJRRCEM) Vol. 7, Issue 1, pp: (13-19), Month: January March 2020, Available at: www.paperpublications.org
- [16] Creswell J. W. (2003). *Research Design: A Qualitative, Quantitative and Mixed Method Approaches* (2nd ed.). Thousand Oaks' California: Sega Publication Inc.
- [17] Dorantes, C-A., Li, C., Peters, G.F., & Richardson, V.J. (2013). The effect of enterprise systems implementation on the firm information environment. *Contemporary Accounting Research*, 30, 4.
- [18] Davenport, T., Harris, J. & Cantrell, S. (2002). The Return of Enterprise Solutions: The Director's Cut. *Accenture Institute for High Performance Business*.
- [19] Dave, C. (2009). *E-business and E-commerce Management. Strategy implementation and Practice* (4th ed.). London, UK: Pearson Education Limited.
- [20] Davenport, T. H., Harris, J. H., & Cantrell. (2004) Enterprise systems and ongoing process change. *European Journal of Operational Research*.
- [21] Dezdar, S., & Ainin, S. (2011). The influence of organizational factors on successful ERP implementation. Management Decision, 49(6), 91-926.
- [22] Donald R. Cooper, & Pamela S. Schindler, (2008), Business Research Methods (10th ed.). McGraw-Hill.
- [23] Dosi, G., Faillo, M. & Marengo, L. (2008). Organizational Capabilities, Patterns of Knowledge Accumulation and Governance Structures in Business Firms: an Introduction. *Organization Studies*, 29(8-9), 1165-1185.
- [24] Dumitru, F., Albu, N., Albu C, & Dumitru M, (2013). ERP implementation and organizational performance, A Romanian case study of best practice. *Amfiteatru Economic*, 15, 34.
- [25] Elbardan, H. (2014). Enterprise Resource Planning Systems Implementation and the Implications for the Internal Audit Function (Unpublished doctoral dissertation). Brunel University, London, United Kingdom.
- [26] Elbashir, M. Z., Collier, P.A., & Sutton, S. G. (2011). The role of organizational absorptive capacity in strategic use of business intelligence to support integrated management control systems. *The Accounting Review*, 86(1), 155-184.
- [27] Graham, J. F. (2009). *Enterprise Resource Planning in Higher Education* (Unpublished doctoral dissertation). University of Missouri, Missouri, USA.
- [28] Granlund, M. (2011). Extending AIS research to management accounting and control issues: a research note. *International Journal of Accounting Information Systems*, 12, 3-19.
- [29] Hassabelnaby, H. R., David, & Vonderembse, M. A. (2012). The Impact of ERP Implementation on Organizational Capabilities and Firm Performance. *Benchmarking: the International Journal*.
- [30] Helfat, C & Margaret, P (2014). Managerial Cognitive Capabilities and the Microfoundations of Dynamic Capabilities. *Strategic Management Journal*
- [31] Helfat, C., & Margaret, P. (2009). Understanding Dynamic Capabilities: Progress Along a Developmental Path. *Strategic organization* 7(1), 91.
- [32] Helfat, C. E. & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), 997-1010.
- [33] Helo, P., Anussornnitisarn, P., & Phusavat, K. (2008). Expectation and reality in ERP implementation: Consultant and solution provider perspective. *Industrial Management & Data Systems*, 108(8), 1045-1059.
- [34] Hendrickson, D. (2010). Getting more out of ERP. *EAI Journal*, *December*, 24-27. http://www.hudumakenya.go.ke:51000/irj/portal/anonymous.
- [35] Jetley, V. (2016). Why ERP is So Important. Retrieved from https://www.bayt.com/en/specialties/q/243092/what-is-the-importance-ofenterprise- resource-planning-erp/.
- [36] Kallunki, J-P., Laitinen, E. K., & Silvola, H. (2011). Impact of enterprise resource planning systems on MC systems and firm performance. *International Journal of Accounting Information Systems*, 12, 20-39.
- [37] Kanellou, A., & Spathis, C. (2013). Accounting benefits and satisfaction in an ERP environment. *International Journal of Accounting Information Systems*, 14(3), 209-234.

- International Journal of Recent Research in Commerce Economics and Management (IJRRCEM) Vol. 7, Issue 1, pp: (13-19), Month: January March 2020, Available at: www.paperpublications.org
- [38] Kipngeno, W. (2017). ERP Implementation at the University of Kabianga. 9th Annual Heads of Institutions Forum December 7-8, 2017 Mombasa.
- [39] Retrieved on 31st january 2018 at https://www.kenet.or.ke/sites/default/files/erp_implentation_at_the_university_of_kabianga_0.pdf.
- [40] Khaparde, V. M. (2012). Barriers of ERP While Implementing ERP: a Literature Review. *Journal of Mechanical and Civil Engineering*, 49-50.
- [41] Kothari, C.R. (2004), *Research Methodology, Methods and Techniques* (2nd ed.). New Delhi: New Age International (p) Ltd Publishers.
- [42] Light, B., & E. L. Wagner. (2006). Integration in ERP Environments: Rhetoric, Realities and Organizational Possibilities. New Technology, *Work and Employment*, 21(3), 215-228.
- [43] Light, C. P. (2014). A Critical Success Factors Model For Enterprise Resource Planning Implementation. *Manchester Business School*, 1-2.
- [44] Maditinos, D., Chatzoudes, D., & Tsairidis, C. (2012). Factors affecting ERP system implementation effectiveness. *Journal of Enterprise Information Management*, 25(1), 60-78.
- [45] Madapusi A., & D'Souza, D. (2012). The influence of ERP system implementation on the operational performance of an organization (2nd ed.). *International Journal of Information Management*, 32(1), 24-34.
- [46] Mahama, H., Elbashir, M. Z., Sutton, S. G., & Arnold, V. (2016). A further interpretation of the relational agency of information systems: a research note. *International Journal of Accounting Information Systems*, 20, 16-25.
- [47] Mallikarjuna, S. A. (2016). Implementation of Enterprise Resource Planning (ERP) Systems in the Construction Industry. *International Journal of Construction Education and Research*, 3-4.
- [48] Mary, M. D., & Susan. E. (2011). Importance and Impact of ERP Systems on Industry and Organization. *Emerald Insight Journal*
- [49] Meer K., J., & Vosselman, E. G. J. (2012). Research paradigms, theoretical pluralism and practical relevance. *Qualitative Research in Accounting and Management*, 9(3), 245-264.
- [50] Merchant, K.A., & Van der Stede W.A. (2011). Management Control Systems (3rd ed.). London: Prentice Hall.
- [51] Ministry of Education (2015). Higher Education Management. Government Printers, Nairobi.
- [52] Mugenda, O.M. and Mugenda, A.G. (2003) Research Methods, Quantitative and Qualitative Approaches. ACT, Nairobi.
- [53] Nafiu, L.A. (2012). Comparison of One-Stage, Two-Stage, and Three Stage Estimators Using Finite Population. *Pacific Journal of Science and Technology, 13*(2), 166-171.
- [54] Nicolaou, A.I., & Bhattacharya, S. (2008). Sustainability of ERPS performance outcomes: the role of post-implementation review quality. *International Journal of Accounting Information Systems*, 9, 43-60.
- [55] Nicolaou, A., & Bhattacharya (2006). Organizational performance effects of ERP systems usage: The impact of post-implementation changes. *International Journal of Accounting Information Systems*, 7(1), 18-35.
- [56] Nooredin, E. (2011). The Impact of ERP Investments on Organizational Performance. *International Journal of the Academic Business World*, 5(2), 27-33.
- [57] Noudoostbeni. A., Ismail. N. A., Jenatabadi, H.S., & Yasin. N. M. (2010). An effective end user knowledge concern training method in enterprise resource planning (ERP) based on critical factors (CFs) in Malaysian SMEs. *International Journal of Business and Management*, 5(7) 167-94.
- [58] Nour, M. A. & Mouakket, S. (2011) A Classification Framework of Critical Success Factors for ERP Systems Implementation: A Multi-Stakeholder Perspective. *International Journal of Enterprise Information Systems*, 7(1), 56-71.
- [59] OECD (2000) *Development Assistance Manual*. DAC Principles for Effective Aid: Paris. O'Leary, D.E. (2004). Enterprise resource planning (ERP) systems: an empirical analysis of benefits. *Journal of Emerging Technologies in Accounting*, 1, 63-72.

- International Journal of Recent Research in Commerce Economics and Management (IJRRCEM) Vol. 7, Issue 1, pp: (13-19), Month: January March 2020, Available at: www.paperpublications.org
- [60] Orodho, A. & Kombo, D. (2002). Research Methods. Nairobi: Kenyatta University Institute of Open Learning.
- [61] Onchera P.O, Manyasi B.N (2013). Functional writing skills for effective communication: the English language classroom in Kenya, Kenya. *JETERAPS*, 4(6), 842-846.
- [62] Peteraf, M., Giada, D. S., & Gianmario, V. (2013). The Elephant in the Room of Dynamic Capabilities: Bringing Two Diverging Conversations Together. *Strategic Management Journal* 34(12), 1389-1410.
- [63] Rashid, M.A., Hossain, L., & Patrick, J. D. (2002). *The evolution of ERP systems: a historical perspective*. London: Idea Group Publishing.
- [64] Rabaa'i, Ahmad A. (2009) *Identifying Critical Success Factors of ERP Systems at the Higher Education Sector.*Third International Symposium on Innovation in Information & Communication Technology.
- [65] Rico, D.F. (2010). *ERP in Higher Education*. Retrieved on 5th October, 2012, from: http://davidfrico.com/rico04f.pdf
- [66] Rikhardsson, P., & Kræmmergaard, P. (2006). Identifying the impacts of enterprise system implementation and use: Examples from Denmark. *International Journal of Accounting Information Systems*.
- [67] Rose, J., & Kræmmergaard, P. (2006). ERP systems and technological discourse shift: managing the implementation journey. *International Journal of Accounting Information Systems*.
- [68] Ross, S. (2015). *How does Enterprise Resource Planning (ERP) assist in human resources planning?* Retrieved from investopedia; http://www.investopedia.com/ask/answers/021115/how-does-enterpriseresource-planning-erp-assist-human-resources-planning.asp.
- [69] Saleh, K. (2016). What is the Importance of Enterprise Resource Planning (ERP)? Retrieved from https://www.bayt.com/en/specialties/q/243092/what-is-theimportance-of-enterprise-resource-planning-erp/.
- [70] Sanzogni, A. A. (2010). Enterprise Resource Planning (ERP) System in Higher Education: A literature Review and Implications. *International Journal of Human and Social Sciences*, 395-397.
- [71] Seo, G. (2013). *Challenges in Implementing Enterprise Resource Planning (ERP)* (Master's thesis). Massachusetts Institute of Technology, Massachusetts, USA.
- [72] Siriginidi, S. R. (2007). Enterprise Resource Planning in Reengineering Business. *Business Process Management Journal*, 6(5), 376-391.
- [73] Scott, W.R. (2014) Institutions and Organizations: Ideas and Interests (4th ed.). Los Angeles: Sage Publications.
- [74] Stevenson, W.J. (2007). Operations Management (9th ed.). New York: McGraw-Hill.
- [75] Sutton, J. (2007). Market Share Dynamics and the 'Persistence of Leadership' Debate. *American Economic Review* 97(1), 222-241.
- [76] Teitinnen, H., Pellinen, J., & Järvenpää, M. (2013). ERP in action challenges and benefits for management control in SME context. *International Journal of Accounting Information Systems*, 14(4), 278-296.
- [77] Tsai, W., Chen, S., Hwang, E., & Hsu, J. (2010). A Study of the Impact of Business Process on the ERP System Effectiveness. *International Journal of Business and Management*.
- [78] Wade, M. & Hulland, J. (2004). Review: The resource-based view and information systems research: Review extension, and suggestions for future research. *MIS Quarterly*, 28(1), 107-142.
- [79] Wagner, E.L., Moll, J., & Newell, S. (2011). Accounting logics, reconfiguration of ERP systems and the emergence of new accounting practices: a socio material perspective. *Management Accounting Research*, 22, 181-197.
- [80] Winter, S. G. (2003). Understanding dynamic capabilities. Strategic Management Journal, 24(10), 991-995.
- [81] Zahra, S. A., Sapienza, H. J. & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, 43(4), 917-955.