The Challenges of Implementing Business Process Reengineering in Social Security Organization: The Impact of Structural Features and Human Resource Management

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Business Process Reengineering (BPR) in the management literature is defined as a fundamental rethinking and a radical and new design of process to achieve significant improvements in the benchmark measures such as price, quality, service and speed. This study examines the relationships between structural characteristics (complexity, formalization and centralization), and human resources management (recruitment, maintenance and improvement) on the BPR implementation in the Social Security Organization (SSO) to check the possible impacts of the special features of SSO and cultural challenges of the organization on the BPR process. This was a descriptive-survey study conducted on the managers and supervisors of 16 headquarters and health and insurance units of the SSO, selected using Morgan Table and relative stratified random sampling methods. Standardized questionnaires were distributed among 210 members and 132 were collected. The descriptive analyses of the variables and the relationship between the variables and the BPR implementation were assessed. The data analyses using structural equation modeling showed a significant relationship between the structural features of SSO, human resources management and implementation of the BPR. Additionally, there was a significant relationship among the complexity variables, formalization, centralization (elements of organizational structure), recruitment, keeping and development of human resources (human resource management elements) and BPR implementation of SSO. It is recommended to study the effects of the governmental organizations on the BPR implementation to determine the priorities. In addition, further studies to evaluate the impacts of the occupational levels of managers and supervisors involving in the BPR implementation are recommended.

Key words: Business Process Reengineering, Organizational Structure, Complexity, Human Resource Management.

Reengineering is fundamental rethinking and radical new design of processes to achieve amazing improvements in critical contemporary measures such as price quality, services and speed" (Hammer/Champy1994). Business Process Reengineering (BPR) is a set of methodologies for actions that lead to changes in organization through its processes. This means that when radical reengineering takes place, the existing organization finds a systematic and group knowledge. This knowledge that has curbed the organization often goes to the organized institution and how it is established. The affairs aiming at changing the organized institution are considered as the "organizational change" activities. They are part of the tactics defined to achieve changes in the organization and development of outputs in the

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form of a new corporate entity and new business activities (Macgillivray, 2004). Nowadays, reengineering has become one of the most common approaches to administrative reforms in public organizations and reengineering principles and techniques have found increasing attractions for policy-makers, experts and scholars of public administration. In today's complex and variable environment, using BPR in organizations is strongly felt. Organizations to adapt to their surroundings require a redesign of their internal and external processes. Public organizations to better respond are forced to harmonize with the surroundings. BPR implementation is not easy at the government agencies and administrative and management activities and creates dependencies on the organizational field. To establish BPR in these organizations a major leap is required in the way we manage public affairs (**Totash** , 2001). Adam and Donaghy, in a paper entitled "Business Processes Reengineering in the Public Sector" in 1999, have engaged in successful BPR implementation in government agencies and stated that although many companies are actively implementing reengineering, the evidence suggests that these efforts often do not lead to the expected results. In fact, recent studies show that 60 to 80 percent of the reengineering programs were unsuccessful (Adam and Donaghy, 1999). Researchers divide BPR implementation problems in government agencies in both human and technical challenges (Mac Adam and Donaghy, 1999, Mitchell & Mac Adam, 1998, Davidson, 1997 and Raijers & Mansar, 2005). For using BPR in public organizations, environment, laws and specific structures of these organizations as well as their effect on implementing BPR projects should be investigated. Moreover, cultural and technical challenges of BPR in these organizations should be evaluated separately to facilitate extracting activities and solutions that help the improved performance of reengineering processes, because there are limitations in different methodologies for BPR. However,the systemic view that can guide the designer in process analysis and leads to redesign a series of measures is not likely. It is obvious that for implementing, adapting and solving technical problems in BPR projects some factors and activities should be determined for moving on the basis of the framework defined by SSO. The present study was aimed to propose a framework of the social welfare organization based on its characteristics and based on this framework to determine the best and most important strategies that can contribute to the success of BPR process.

Research Methodology

This was a descriptive-survey and cross sectional study. Statistical population includes all middle and senior managers and supervisors working in administrative, insurance, and health units of SSO. The minimum sample size of the statistical population (210 subjects) in accordance with Krejcie, Morgan and Cohen Tables were determined 132 subjects. In this study, sampling method is "proportionate stratified random sampling" or partial sampling. In this study, considering the qualitative variables, the nominal and ordinal scales are used, and for personal data of the questionnaire, the nominal scale and for other variables, the ordinal scale is used (Table 1). For the present study, Cronbach's alpha was calculated using SPSS (version 20) software. For this purpose, an initial sample of 30 questionnaires was pre-tested among managers and supervisors. Then, using the obtained data, the reliability coefficient is calculated and Table 2 shows the validity and reliability indices. Average Variance Extracted (AVE) is for validity, and Composite Reliability (CR) indices and Cronbach's alpha are for investigation of reliability. To calculate the convergent validity, Fornell & Larcker have proposed AVE Criterion. For the AVEs and derivatives equal or greater than 0.5, indices have good validity index. This means that a hidden variable can averagely explain more than half of its indices variance (apparent variables). Given that in this research, AVE criterion and derivatives for all research variables is above 0.5. Thus, the concurrent validity of the model structures is confirmed. Composite Reliability (CR) and Cronbach's alpha check the validity and reliability of measurement instrument. All these coefficients are higher than 0.7 and indicate the high reliability and validity of the measurement instrument. For data analysis, parametric statistical methods were used. In this study, in order to describe the data, descriptive statistics are used for structural equation in Lisrel and SPSS statistical packages.

RESULTS

The results of descriptive statistics for the demographic variables obtained from the questionnaires of this study are presented in Table 1.

Education

The results show that 15 cases of respondents are educated below bachelor's degree that consist 11.36% of the sample. Besides, 79 subjects, i.e. 59.85%, have Bachelor's degree, and 15 subjects, i.e. 11.36%, are educated at MA level, and 23 PhD subjects, i.e. 17.42%, participated in this study.

Working Experience

Results show that 3.03 percent of respondents are younger than five years, 9.85% are 5 to 10 years old, 28.03% are 11 to 15 years old, 37.12% are 16 to 20 years old and 21.97% have more than twenty years' working experience.

These numbers indicate the maximum of samples were 16 to 20 years old and the minimum were less than 5 years of working experience.

Normality Test of the Pattern Components

To investigate the normality of components of pattern dimensions, the Kolmogorov-Smirnov test was used. Kolmogorov-Smirnov test of normality for all of the general pattern components were conducted and in all tests, statistical hypothesis is as follows:

H0: Data are normal (data have come from a normal population)

H1: Data are not normal (data have not come from normal population)

If the level is significantly larger than the error 0.05, the null hypothesis is concluded. And if the significant level is smaller than the error 0.05 Hypothesis 1 is concluded. As it can be observed in Table 3, since the level of significance in all components is higher than error 0.05, the null

Table 1. Descriptive statistics for demographic characteristics

Row	Title	Percentage	Frequency	Frequency
1	Sex	Male	94	71.21
		Female	38	28.79
2	Education	Below the bachelor	15	11.36
		Bachelor	79	59.85
		Masters Degree	15	11.36
		PhD	23	17.42
4	Working experience	Less than 5 years	4	3.03
		Five to ten years	13	9.85
		Eleven to fifteen years	37	28.03
		Sixteen to twenty years	49	37.12
		More than twenty years	29	21.97

Sex: The results obtained from data analysis show that 79.28% of respondents are females and 21.71% are males.

Table 2. Reliability coefficients, average variance extracted, composite reliability and Cronbach's alpha for the variables of the study

Hidden variables	Average Variance Extracted	Composite Reliability	Cronbach's alpha
Complexity	0.535	0.810	0.745
Formalization	0.564	0.916	0.845
Centralization	0.525	0.799	0.796
Recruitment	0.703	0.904	0.860
Maintenance	0.554	0.881	0.838
Improvement	0.717	0.927	0.901
Structural Features	0.526	0.844	0.769

hypothesis is concluded. It means that all the research components are normal and applying parametric tests are permitted. In addition the values of Z-score for the variables are presented in Table 3.

The first main hypothesis:

There is a significant relationship between the structural features of SSO and BPR implementation.

H0: There is no significant relationship between the structural features of SSO and the BPR implementation.

H1: There is a significant relationship between the structural features of SSO and the BPR implementation.

According to the results obtained from the path coefficient and T-statistics specified in Table 4 and also the standardized coefficients and significant coefficients of the model diagrams, structural features variable of SSO has a significant impact on the BPR implementation at confidence level of 95%.

(T-statistic is outside the range of - 1.96 to +1.96). The positive values of the beta coefficient indicated the relationship between the two variables is positive and direct. Therefore, at confidence level of 95%, it can be expected that with developing structural features of SSO, the BPR implementation is promoted in positive direction as well. And the lack of developing structural features of SSO leads to poor BPR implementation in the SSO. And therefore, the main hypothesis is confirmed at confidence level of 95%.

The first sub-hypothesis:

There is a significant relationship between the complexity of the organization and the BPR implementation.

H0: There is no significant relationship between the complexity of organization and the BPR implementation.

Table 3. Results of the Kolmogorov-Smirnov test for the research variables

Research Variables	Z- statistics	Level of Significance	Result of Hypothesis
Complexity	1.351	0.053	Normal
Formalization	1.086	0.189	Normal
Centralization	0.825	0504	Normal
Recruitment	1.211	0.091	Normal
Maintenance	1.101	0.269	Normal
Improvement	0.833	0.491	Normal
Structural Features	0.449	0.965	Normal
Human Resource Management	0.421	0.994	Normal
Implementation of business process reengineering	0.861	0.448	Normal

Table 4. The path coefficients, T-statistics and the results of research hypothesis

	R	Path coefficient(β)	T-statistics	Level of Significance	The result of researcher hypothesis
H1	Structural Features →BPR implementation	0.28	2.31	0.05	Approved
H2	Human Resource Management →BPR implementation	0.80	4.35	<0.05	Approved
H1.1	Complexity BPR implementation	0.08	2.59	<0.05	Approved
H1.2	FormalizationBPR implementation	0.061	2.06	<0.05	Approved
H1.3	CentralizationBPR implementation	0.045	2.78	<0.05	Approved
H2.A	Recruitment BPR implementation	.224	4.76	<0.05	Approved
H2.2	Maintenance BPR implementation	0.257	3.23	<0.05	Approved
H2.3	improvement BPR implementation	0.158	3.07	<0.05	Approved

H1: There is a significant relationship between the complexity of organization and the BPR implementation. According to the results of the path coefficient and T-statistics specified in Table 4 as well as the Standardized coefficients and significant coefficients of the sub-model. It has been determined that the complexity variable of the Organization has a significant impact on BPR implementation at confidence level of 95%. (T-statistic is outside the range of – 1.96 to +1.96). Due to the positivity of beta coefficient, it can be said that the relationship between the two variables is positive and direct. Therefore, at confidence level of 95%, it can be expected that with increasing the complexity of Organization the BPR implementation is promoted in positive direction as well. The lack of increasing the complexity of the Organization leads to poor performance of BPR in SSO. And therefore, the first sub-hypothesis is confirmed at confidence level of 95%.

The second sub-hypothesis:

There is a significant relationship between the formalization of the Organization and the BPR implementation.

H0: There is no significant relationship between the formalization of the Organization and BPR implementation.

H1: There is a significant relationship between the formalization of the Organization and BPR implementation.

According to the results obtained from the path coefficient and T-statistics specified in Table 4 as well as the standardized coefficients and significant coefficients of the sub-model, the variable of the Organization formalization in confidence level of 95%, has a significant impact on BPR implementation (T-statistic is outside the range of - +1.96 to +1.96). Due to the positivity of beta coefficient it can be said that the relationship between two variables is positive and direct. Therefore, it can be expected that increasing the formalization of Organization will enhance the BPR implementation. And the lack of increasing the formalization of the Organization will also lead to poor BPR implementation in SSO and as a result the second sub-hypothesis is confirmed at confidence level of 95%.

The third sub-hypothesis:

There is a significant relationship between the centralization of organization and the BPR implementation.

H0: There is no significant relationship between the centralization of organization and the BPR implementation.

H1: There is a significant relationship between the centralization of organization and the BPR implementation. According to the results of the path coefficient and T-statistics specified in Table 4 and the Standardized coefficients and significant coefficients of the sub-model, it has been found that the variable of Organization's centralization has a significant impact on the BPR implementation at confidence level of 95% (T-statistic is outside the range of -1.96 to +1.96).

The positive beta coefficient indicates the relationship between two variables is positive and direct. Therefore, at the confidence level of 95% it can be expected that with increasing the Organization's centralization the BPR implementation is promoted in the same direction too. And the lack of increased centralization of the Organization will also lead to poor BPR implementation in SSO and thus the third sub-hypothesis is approved at confidence level of 95%.

The second main hypothesis:

There is a significant relationship between the human resource management and the BPR implementation in SSO.

H0: There is no significant relationship between the human resource management and the BPR implementation in SSO.

H1: There is a significant relationship between the human resource management and the BPR implementation in SSO. According to the results of the path coefficient, T-statistics specified in Table 4, the standardized coefficients and significant coefficients of the model diagrams, it has been found that human resource management variable at confidence level of 95% has a significant impact on the BPR implementation in SSO (T-statistic is outside the range of - 1.96 to +1.96). The positive values of the beta coefficient indicated that the relationship between the two variables is positive and direct. Therefore, at confidence level of 95% it can be expected that with increasing the human resource management variable, BPR in SSO is also promoted in positive direction. And the lack of increase in human resource management will also lead to poor BPR implementation in SSO and thus

the second hypothesis is confirmed at confidence level of 95%.

The first sub-hypothesis:

There is a significant relationship between recruiting the human resources and BPR implementation in SSO.

H0: There is no significant relationship between recruiting the human resources and BPR implementation in SSO.

H1: There is a significant relationship between the human resource recruitment and the BPR implementation in SSO.

According to the results of the path coefficient and T-statistics specified in Table 4 and also the standardized coefficients and significant coefficients of the model diagrams it has been found that human resources variable has a significant impact at confidence level of 95% on the BPR implementation in SSO (T-statistic is outside the range of - 1.96 to +1.96). Due to the positivity of beta coefficient it can be said that the relationship between the two variables is positive and direct. Therefore, at confidence level of 95% it can be expected that with increasing recruiting human resources, BPR implementation of SSO is promoted at the positive direction and lack of increase in human resources will also lead to poor BPR implementation in the SSO in SSO and as a result, the first sub-hypothesis is confirmed at confidence level of 95%.

The second sub-hypothesis:

There is a significant relationship between the maintenance of human resources and the BPR implementation in SSO.

H0: There is no significant relationship between the maintenance of human resources and the BPR implementation in SSO.

H1: There is a significant relationship between the maintenance of human resources and the BPR implementation in SSO.

According to the results of the path coefficient and T-statistics specified in Table 4 and the diagrams of standardized coefficients and the significance of sub-models coefficients, it has been specified that the maintained variable of human resources at confidence level of 95% in BPR implementation has a significant impact in SSO (T-statistic is outside the range of - 1.96 to +1.96). The positive values of beta coefficient indicated the relationship of the two variables is positive

and direct. Therefore, at the confidence level of 95% it can be expected that increasing the maintenance of human resources, BPR implementation in SSO is promoted at the positive direction and lack of development of human resources will lead to poor BPR implementation in SSO and as a result, the second sub-hypothesis is confirmed at confidence level of 95%. The third sub-hypothesis: There is a significant relationship between the development and BPR implementation in the SSO.

H0: There is no significant relationship between the development and BPR implementation in SSO.

H1: There is a significant relationship between the development and BPR implementation in SSO. According to the results of the path coefficient and T-statistics specified in Table 4 and the diagrams of standardized coefficients and the significance of sub-model coefficients, it has been specified that development variable is significant at confidence level of 95% on BPR implementation in SSO. (T-statistic is outside the range of - 1.96 to +1.96) Due to the positivity of beta coefficient it can be said that the relationship between the two variables is positive and direct. Therefore, at confidence level of 95% it can be expected that with increasing development variable, BPR implementation in SSO is promoted at the positive direction and the lack of improving the human resources will also lead to poor BPR implementation in SSO and as a result, the third sub-hypothesis is confirmed at confidence level of 95%.

DISCUSSION

This study was aimed to investigate "The Challenges of Implementing BPR in the SSO" through investigating the relationships between structural characteristics, human resource management and BPR implementation in SSO. According to the studies of Reijers & Mansar (2004 and 2005) human challenges are problems caused by insufficient attention to human resources as the most important factor of change; technical challenges are the problems derived from the organizational structure, function, environment and corporate communications (Reijers & Mansar 2004, 2005). It is obvious that paying attention to human resources can significantly enhance the

reengineering process. What is considered in this questionnaire as the basis for testing these challenges is operating the characteristics of human resources in BPR reported by Purwadi et al.

We tried to consider that paying attention to these factors leads to the success of the BPR implementation because the manpower is the most influential component in project implementation and lack of attention to it creates substantial challenges in the process of activities. Research data using a standardized questionnaire in the study population that consisted of medical staff and insurance units (sixteen units) were collected. It should also be noted that to ensure reliability. Initially, they were distributed among 30 managers and supervisors and the results showed the validity of the questionnaire. The study population consisted of managers and supervisors of health and insurance units of SSO selected using relative stratified random sampling technique. The questionnaires were distributed among 210 members and 132 were collected. The collected data were analyzed using the statistical packages of SPSS and Lisrel and analyzed in two parts of the descriptive statistics (demographic characteristics) and inferential statistics (including hypothesis testing) were studied and discussed and are expressed in this section. The results of the analysis of the data show a significant relationship between human resource management and BPR implementation with the structural features of social organization. Moreover, there is a significant relationship between the variables complexity, formalization and centralization (elements of organizational structure) recruitment and maintenance and human resource development (human resource management elements) and BPR implementation in the SSO.

CONCLUSION

This study showed a significant correlation between the crucial characteristics of the Social Security Organization including structural characteristics and human resources management and BPR process. Conducting further studies investigating the effects of variables such as the occupational levels of managers and supervisors involving in the BPR implementation are recommended. Furthermore, it is recommended

to study the effects of the governmental organizations on the BPR implementation to determine the priorities of management strategies.

REFERENCES

1. Al-Mashari, M. , Zairi, M. , BPR implementation process: an analysis of key success and failure factors, *Business Process Management Journal,* 1999; **5**(1).
2. Arnold, Hugh J., Feldman, Daniel C. ,(1986), Organizational behavior , New York: McGraw-Hill.
3. Attaran, M. Why does reengineering fail? A practical guide for successful implementation, *Jurnal of management Development,* 2000; **19**(9), pp. 79-801.
4. Barney, JB. , Griffin R. The Management of Organizations: Strategy, Structure and Behavior, Boston: Houghton Mifflin 1992 , MA.
5. Bartlett, C.A. and Goshal, S, Release the entrepreneurial hostages from your corporate hierarchy, *Strategy & Leadership,* 1996; **24**(4).
6. Caruana, A., Ewing, T.M. and Ramaseshan, B, Effects of some environmental challenges and centralization on the entrepreneurial orientation and performance of public sector entities, *The Service Industries Journal,* 2002; **22**(2).
7. Carrier, C, "Entrepreneurship in small businesses: an exploratory study", *Entrepreneurship: Theory & Practice,* 1996; **21**(1).
8. Covin, J. G. Slevin, D. P, New venture strategic posture, structure, and performance: an industry life cycle analysis, *Journal of Business Venturing,* 1990; **5**(2).
9. Covin, J. G. Slevin, D. P, Judging entrepreneurial style and organizational structures: How to get your act together, *Sloan Management Review,* 1990; **31**.
10. Daft, RL., Management, Illustrated, Dryden Press, Second edition 1991.
11. Damanpour, F. Organizational complexity and innovation: Developing and testing multiple contingency models, *Management Science,* 1996; **42**(5).
12. Davenport, T. , Short, J. E., The new industrial engineering: information technology and business process redesign, *Sloan Management Review,* 1990; **31** (4), pp. 11-27.
13. Davenport, T. H. Process innovation; reengineering work through information technology. Boston, Harvard Business School Press 1993.
14. Davidson, G., Managing by process in private

and public organizations: Scientific management in the information revolution, available at: WWW. Proquest. com.

15. Dess, Gregory G. Lumpkin, G. T. McGee, Jeffrey E, "Linking Corporate Entrepreneurship to Strategy, Structure, and Process: Suggested Research Directions", *Journal of Entrepreneurship Theory & Practice,* 1999; **23**(3).

16. Feltes, P. and Karuppan, C. Reengineering: getting down to the business of doing business, *Industrial Management,* 1995; **37**(4).

17. Fredrickson, J.W. The strategic decision process and the organizational structure, *Academy of Management Review* 1986.

19. Grote, D. Public Organization Enrichment, Administration & Society, pp. 425

20. Halachmi, H., Business Process Reengineering in the Public sector: Trying to get another frog to fly, 1996; available at: WWW. Proquest. Com.

21. Hammer, M. , Champy, J. A, Reengineering the Corporation: A Manifesto for Business Revolution*,* Harper Business Books, New York, NY,.

22. Hammer, M. , Champy, J. A. (1994) , Redesign Of The Business, Barcelona, Spain: Parramon.

23. Jogaratnam, Giri; Ching-Yick Tse, Eliza, Entrepreneurial orientation and the structuring of organizations, *International Journal of Contemporary Hospitality Management,* 2006; **18**(6).

24. MacGillivray, R. Re-engineering State Government? For a Successful Model of Profound Transformation, See the Telecommunications Industry, California, Taxpayers' Association

25. Mansar, S. , Reijers,H. A, (2004) , Best practices in business process redesign: an overview and qualitative evaluation of successful redesign heuristics, available at: WWW. Elservier. Com

26. Maull, R. S. , Tranfield, D. R. , Maull, W. Factors characterizing the maturity of BPR programmes, *International Journal of Operations & Production Management,* 2003; **23**(6), pp. 596-624. **Publisher:** Emerald Group Publishing Limited.

27. Mc Adam, R., Mitchell, N., Development of a business Process re-engineering model applicable to the public Sector, *Total Quality Management,* 1998; , NO 4/5.

28. McAdam, R. , Donaghy, J. Business Process re-engineering in the public sector: A study of staff Perception and critical success factors,*Business Process Management Journal*, 1999; **5**(1), pp.33.

29. Miles, M. P. , Arnold, D. R. The relationship between marketing orientation and entrepreneurial orientation, *Entrepreneurship Theory and Practice* 1991.

30. Morris, M. H., Trotter, J. D., Institutionalizing entrepreneurship in a large company: a case study at AT&T , *Ind Mark Manage,* 1990; **19** .

31. Muthu, S., Whitman, L. and Cheraghi, H. S, Business process reengineering: a consolidated methodology, Proceedings of the 4th Annual International Conference on Industrial Engineering Theory, Applications and Practice.

32. Osborne, D. ,Gabler ,T., Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector, Reading, MA: Addison-Wesley 1993.

33. Priem, R., Lyon, D. , Dess, G., Inherent limitations of demographic proxies in top management team heterogeneity research, *Journal of Management,* 1999; **25**(6).

34. Puwadi, D., Tanaka, K. and Masaharu, M., Reengineering for human resource management in Japanese companies: Is it important to be introduced? *International Journal Production Economics,* 1999; **60**(6).

35. Robertson, P. J. and Seneviratne, S. J. Outcomes of planned organizational change in the public sector: A meta-analytic comparison to the private sector, *Public Administration Review,* 1995; **55**.

36. Robbins, Stephen P, Organization Theory, New York: prentice-Hall 1987.

37. Ross, K., Johnson, S., Stoneburner, R., Lee, Information Security, Nist Special Publication 2005.

38. Scheer, A., Business Progress Engineering-Reference Models For Industrial Companies, Berlin-Heidelberg-New York *et al* 1994.

39. Scot-Motorn, M. S., The Corporation Of The 1990s: Information Technology And Organizational Transformation, New York, NY: Oxford University Press 1991.

40. Thong, J. Y. L. , Yap, C. S. , and Seah, K. L, Business process reengineering in the public sector: The case of the Housing Development Board in Singapore, *Journal of Management Information Systems (JMIS)*, 2000; **17**(1).

41. Thony, Y., L., Yap., C., Seah, K., Business Process Reengineering in the Public Sector: The Case of the Housing Development Board in Singapore, *Journal of management Information Systems*, 2003; **17**(7), pp. 245-270.

42. Verheul, I. , Risseeuw, P. A. and Barteles, G. Gender differences in strategy and human resource management: the case of the Dutch real estate brokerage, *International Small Business Journal,* 2002; **20**, pp. 439-481

43. Whisler, L. Thomas, Information Technology

and Organizational Change, Wadsworth Pub, Company, Belmont California 1970.

44. Willmott, Hugh, The structuring of organizational structure, *Administration Science Quarterly,* 1981; **26**(3).

45. Zander R, Ulbrich H., Reference-free mixed FE-MBS approach for beam structures with constraints, *Journal of Nonlinear Dynamics,* 2006; **46**(4).