XVIII ICIEOM 2012
International Conference on Industrial Engineering and Operations Management
Guimarães - Portugal
July 9 - 11, 2012

Social Regulation of the work and ERP

A. M. C. Ponce*, J. A. Camarotto*, P. A. Ponce+

*Departament of Production Engineering, Federal University of San Carlos, 13565-905, São Carlos, Brasil
+ Departament of Political Science, Federal University of San Carlos, 13565-905, São Carlos, Brasil, financially supported by FAPESP

Email: amcponce@gmail.com; camarotto@dep.ufscar.br; pedro.cso@gmail.com

Abstract

The ERP - Enterprise Resource Planning is considered one of the most important strategies for the organizations in a setting that reconfigures itself permanently. Most research on this subject follows a pragmatic orientation-interventionist, seeking to identify practices that could improve the results of ERP implementations for a number of organizational actors, but little attention has been directed to aspects of labor regulation in ERP environment. In Weber's view, every artifact, a machine for example, can only be interpreted and understood from the sense that human action has provided its production and use, without resorting to that sense it shall remain entirely incomprehensible. In this perspective, this paper aims to introduce a discussion about the importance of understanding the process of regulation of labor in carrying out the activity mediated by the ERP system, having as theoretical assumption the analysis of the Organizational Act Theory.

Keywords: ERP systems, regulation of the work, organizational acting

1 Introduction

In recent decades, the productive sector has passed to a major restructuring and organization that redefined their strategies to remain competitive in the markets they serve. New information technologies have been incorporated into the production process, allowing real-time operation, optimization of the workforce, integration of the entire company around a single database with the possibility of real-time integration with suppliers, distributors, customers and other stakeholders.

Among the technologies available information, the ERP - Enterprise Resource Planning is considered one of the most important strategies for organizations within this framework that continuously reconfigures and gives support to thousands of business (Haberkorn, 1999; Davenport, 2002).

However, according to Souza, Zacol (2003), numerous benefits have been touted to companies that adopted the ERP system. But soon, the companies realized that the system implementation was much more complex than simply installing new software in the company.

Impacts on organizational structure and work organization were identified in studies by Robinson, Wilson (2001); Saccol, Macadar, Soares (2003), Ramos, Miranda (2003), Mendes, Escrivão Filho (2003); Padilha, Marins (2005), Jesus Oliveira (2006), Lima, Carrieri, Pimentel (2007); Ludmer, Falk (2007), Santos, Castilhos, Barcellos (2007).

Analyzing the publications of the IS Journal, 2005-2008, Dery et al (2006) found that most studies on ERP have a pragmatic and interventionist orientation. Among the four orientations (pragmatic and interventionist, theoretical, empirical and critical emancipatory), empirical oriented studies constitutes the lowest frequency ones, mainly with regard to the information technology impact on design issues such as individual work, teamwork and organizational change, including behavioral and attitudinal data collected through questionnaires and interviews.

Despite the importance of pragmatic-interventionist education-oriented studies, according to Weber (1999), every artifact can only be interpreted and understood from the sense that human action has provided its production and use, without the use of this sense it remains entirely incomprehensible.

In this perspective, this paper aims to reflect on the importance of understanding the process of labor regulation in carrying out the activity mediated by the ERP system, using the analysis of the Theory of Organizational Acting by Maggi (2006) as theoretical assumption. The work will be performed by means of an exploratory research involving literature.

2 Brief history of the evolution of the ERP system

The ERP - Enterprise Resource Planning is considered an evolution of the system MRPII - Manufacturing Resource Planning, and the MRPII an evolution of the system MRP - Material Planning Requeriment (Laurindo, Mesquita, 2000; Pradella, Silva (2005), Gamboa, Caputo, Bresciani Filho, 2004).

According to Peeters (2009), in 1963, it was developed the bill-of-material by the IBM (International Business Machine) team, formed by Gene Thomas, Joseph and Oliver Wight Orlick.

In continuation of this project, it was developed, around 1970, the MRP system (Material Requirement Planning) that would bring greater efficiency to production management. This system had three basic elements for production management: i) master program production, ii) list of materials, iii) quantities in stock. The MRP model would allow the evaluation of the needs of these materials along the time. In 1981, Oliver Wight publishes the book Manufacturing Resources Planning, MRPII, which presents the new generation of MRP's. Besides incorporating the modules RCCP - Rough Cut Capacity Planning (Resource Capacity Planning Critics), and CRP - Capacity Planning Requirement (Capacity Requirements Planning) the new system allows us to consider other production resources, including human resources and budget. Given the increasing scope of the model, it came to be called resource planning of production rather than material needs.

According to Laurindo, Mesquita (2000), the planning systems of production did not fully meet the needs of business due to the limitation of the scope and difficulties of integration with other systems used in different areas of the company. In the early 90s, as an evolution of the MRPII systems, integrated systems have emerged, called "Enterprise Resource Planning" - ERP.

This new generation of systems has expanded its scope beyond the production, integrating the areas of Accounting, Financial, Commercial, Human Resources, Engineering, Project Management, Relationship Management Client, advanced planning, encompassing a full range of activities within the companies business scenario (Laurindo, Mesquita, 2000; Peeters, 2009).

These systems are considered as one of the most important developments in the application of information technology by firms in recent years and gives support to thousands of business activities (Haberkorn, 1999; Davenport, 2002).

3 Impacts of ERP system on the organization of work

ERP systems impacts over all the organization and, according to research conducted by Bio 1996; Caldas, Wood Jr., 2004; Nah et al, 2001; Menezes, 2003 ; Hippolito, 2003; Aladwani, 2001; Padilha, Marins, 2005, among the problems cited in its implementation stands out the human factor as one the most critical.

The impacts on people and work organization arise primarily from the factors mentioned in Table 1:

Table 1 - Impact of ERP on the organization of work

Impacts over people and organization of the work	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Accumulation of functions by some posts		x				x			
Activities that stop being necessary, in function of the integration / but others increase in wide scale in the areas of input of data					x		x		
Increased accountability / given the integration, an error can affect the entire		x	x		x	x	x		

company									
Increase of control and requirement on the work	x	x					x	x	
Increase of the rhythm and intensity of the work		x							
Reduction of the quantity of direct queries and exchanges of verbal information		x							
Best discipline in the realization of the work		x						x	
Changes in the power structure							x		x
Necessity of committed and more agile persons		x							
Necessity of better systemic vision about the organization processes		x			x		x		
Necessity of better preparation and technical qualification of the persons and multidisciplinary knowledge / competences	x	x		x	x	x	x		x
Preoccupation with the truthfulness and precision of the data		x		x		x			
Resistance to the system / suspicion of loss of the job or power, in function of the share of the information				x	x	x	x		x
Tendency to an increase of the autonomy for the realization of tasks and routine decisions		x	x						

1 Robinson, Wilson (2001)
2 Saccol, Macadar e Soares (2003)
3 Ramos, Miranda (2003)
4 Mendes, Escrivão Filho (2003)
5 Padilha, Marins (2005)
6 Jesus, Oliveira (2006)
7 Lima, Carrieri, Pimentel (2007)
8 Ludmer, Falk (2007)
9 Santos, Castilhos, Barcellos (2007)

The impacts observed more frequently, according to table 1, are referred to the "necessity of a better preparation and technical qualification and multidisciplinary knowledge", "resistance to the system" and "increase of the responsibility ".

For Ludmer, Rodrigues Filho (2004), in a theoretical-critical approach of analysis, the works developed on the ERP subject presents a technicist and reductionist vision. They argue that most of the scholars bases their studies on the premise of which the implementations of ERPs take place in predictable and controlled environments, despising the implication of problematic critical aspects. They affirm that the ERP promises the integration of the whole enterprise, but they present serious problems of inflexibility after its implementation. Besides, they affirm that under the optics of two imperatives of the capitalist organization of the work processes, the system ERP contributes to the maintenance of the productivity of the workforce and his control of predictable form.

In this aspect, Ludmer, Rodrigues Filho (2004) corroborate with Wood Jr; Paula's Breads; Hot springs (2003), which affirms that the integrated systems of management contribute to the corporative totalitarianism, which can be checked by the tendency of processes, activities and officials to be controlled through instruments and proceedings that promote a domination decentered and diffuse. In fact, the control does not materialize itself in the chief's figure, but in the software that from the login and sign, monitors all and any operation that the user does, the time of connection, the navigation in the Internet, the fulfilled proceeding. The traceability is simultaneous to the action and, once connected, any user can be easily identified.

Wood J, Paes de Paula, Caldas (2003), reports to the manipulation of the reality by the agents of the industry, advisers and the managers themselves who make use of their solutions and who present the ERP as an answer to the organizational problems. In this aspect, Davenport (2004), reinforces the power of the TI sellers, whose enterprises of hardware, software and communications it has interest in which it are believed that the purchase of more technology will resolve the problems of the information.

Therefore, concerning the corporative totalitarianism, Wood Jr., Paes de Paula, Caldas (2003), affirms that autonomy, independence is given and when the self-determination of the users of the ERP system was stimulated, but that is nothing more then a process of disguised domination. The ERP system brings a set

of prescriptions of the proceedings of the work, however, in the development of the real work, the user is compelled to use the strategies of regulation to reach the variability of the work. The actions of regulation depend on the level of autonomy or of the discretion granted to a user, and the freedom of action is stimulated by sights to reach the marks and organizational objectives, increasing the responsibility of the user on the results of the work.

Another aspect to consider in the approach of the corporative totalitarianism, according to the authors, is that the users themselves legitimize the "constructed reality" for the organization, in other words, under the speech of bigger autonomy, flexibility, participation, they intensify the work, the collections, the rhythm is accelerated, and they increase the responsibilities and collect bigger compromising

Ludmer, Rodrigues (2004) argue, that the integrated model of the ERP system aims to provide a set of processes that use the smallest amount possible of work, easily reached this mark, fact that has his construction based on the beginnings of the reengineering that takes the redefinition of the tasks, stimulating the multi-skills and acting of the worker in several interconnected processes. The activity of work is practiced under constant pressure, given the high interdependence of the processes and the fact that they occur " just in time ".

Despite of all the problems pointed by the literature, Davenport et al (2004), argue that there is an obsession disseminated by technology everywhere, but little attention has been dispensed to the nature of the relation between the persons and the technologies themselves, which leads to countless problems that are recurrently addressed by the literature.

The revision of the literature proves the argument carried out by Dery et al (2006), specially the publications of the IS Journal in the period of 2005-2008, through which they noted that there is a preponderance of the literature that examines the ERPs systems through an essentially management optics, in contrast with few academic works witch consider the work and the organizational implications of the system. They checked that most of the published works have a direction pragmatic-interventionist, directing to the identification of practices that might improve the results of the implementations of ERP for an organizational series of action. And, a minority of the publications has an empirical direction, when the questions were turned like the conception of individual work, work in team and organizational change, including attitudinal and behavioral data collected through questionnaires and interviews.

Despite of the importance and contribution of the studies with direction pragmatic-interventionist is necessary to enlarge the understanding of the process of regulation of the work, carried out through the ERP system. This embraced necessarily the interpretation and understanding that the human action provided his production and utilization, according to Weber's theoretical presupposition, without which it will remain completely incomprehensibly.

4 The Process of Regulation of the Work Mediated by the ERP System

Maggi (2006), based on the Weber's theoretical presupposition on the social action, developed the theory of organizational acting.

The social action, as defined by Weber, constitutes the object of study of the sociology: a science that intends to understand and interpret the social action and explain it causally in his course and in his effects. For "social" action the author understands an action that, on the sense aimed by the agent or the agents, refers to the behavior of others, being guided by then in their course in other words, a human attitude in which the subject agent or subject agents attribute a sense to their attitudes. This concept of action conduct to an understanding of acting socially in a interpretative approach, according to interpretative hypotheses that must be submitted to a empirical checking.

Therefore, acting socially differentiates itself from the other forms of acting as the agent attributes subjective senses to the attitude. Nevertheless, the author also warns what the limits between an action with sense and a single behavior, not connected with a sense aimed by the agent, are completely fluid. A

very important part of all sociological relevant behaviors especially the purely traditional action dwells in the frontier between both (reactive agent and sense aimed by the agent).

The construction of ideal-types, what consists in creating systems that permits conceptualize or, to put, in a conceptual unit, a series of characteristics, qualities of existent historical, diffuse and discreet phenomena in different measures in order to provide a better understanding of the real fact, Weber prepares 4 ideal types of acting. According the social action, like the whole action, can be determined: 1. In a rational way referring to ways and ends, in other words, according to expectations as for the behavior of objects of the exterior world and of other persons, using these expectations like conditions or ways to reach their own ends; 2. in rational way referring to values, of the belief in the ethical, religious or aesthetic values, and the determination of the action does not depend on the result; 3. in a matter of affective, essentially emotional; and 4. in traditional way, for deep-rooted customs.

Any sociological interpretation of an action intends to reach an evidence. This evidence, according to the author, can have a rational character (in this case understood like something logical-mathematical) or of a intuitively understanding (emotional, artistic-receptive). What Weber calls rationally obvious is everything that is intellectually understood, in complete and transparent way in his connection of sense. Differently of what it would be an intuitive understanding of the action, based on emotional experienced connections.

The understanding of the phenomenon of the social action in the light of the weberian epistemology implies in considering it as a starting point of the scientific analysis, provided that the explanation of social act pass through an empirical checking. According to Maggi (2006), this is used to explain the causal dimension or the adequate causality of the empirical conditions of the action.

In the field of the study of the organizations, the social action vision through the vision of process, avoids theoretical difficulties that can consider the organization as a pre-determinated data with relation to the individual, or of those who considers the organization as a product of numerous entanglements of subjective actions.

Therefore, in order to understand the process of regulation work developed through the ERP system, it is necessary, to contrast it under the classic model optics, of the functionalist vision, of the built system and the vision of process, (Tersac, Maggi, 2004). This last approach, vision of process, corroborates with the weberian conception of action as a process.

The situation of work, on the classic model, is seen under the approach of a social system completely predetermined and, in relation to the individual, determinist. From the conception of the absolute rationality, of the perfect order, it is possible to get efficiency and maximum efficacy to achieve the one best way, the best program of work. There is no variability between the foreordination and the execution. The system is considered invariable and stable, and the tasks follow the same direction – stables of the elementary actions and represented in the chart of the organization. The ERP system is highly standardized and the logic of its conception corresponds to situation of work of a classic model, determinist regarding the users.

In the perspective of the functionalist vision, the social system has as foundation the notion of function, brought from the biological sciences. Each part of the system contributes to reach the objective of his functional conditions. The classic model characteristics are no longer verified and give place to the flexibility, enrichment of the tasks, reciprocal relations and communication, which increase the potentiality of the system. Several forms of regulation are possible, but the one who ensures the best integration or adaptation of the subjects is considered the best. But, Tersac, Maggi (2004, p. 96) argues that “the background of the epistemological choice did not change”. There is still a pre-deterministic vision in relation to the subjects involved; because the "flexibilization of social structure and recognition of informal solutions" does not satisfies the individuals involved, but satisfies the functional needs of the system. In this perspective, it is expected that the subject will solve the problem, since there is no longer separation between management and implementation in this model.

Regarding the optics of the built system, the social system is produced by the interactions of the subjects, and the "reality is not a natural data existing before the action, it is a social construction defined by subjective significations" (Tersac, Maggi, 2004, p.96). In this vision, the only possible rationality is afterwards. There is no predetermination, like in the visions of the classic model or functionalist. The models of relation are produced from the interactions of the subjects, and these are seen as separated entities of the social system. There is not, like in the classic model, adaptation of subject to organization, but the conception of the social built system leads to a rejection of the organization.

In the vision of the process of action the predetermination of the models opposes to the classic, functionalist and of the built system, in other words, of the absolute rationality beforehand or afterwards. And, from the epistemological debate of these approaches it was produced another vision of the social system, as a process of actions and decisions. The system produce, modify and organize itself from a limited and intentional rationality, once it reflects the limits of the human reason. Second Tersac, Maggi (2004, p.97):

The course of the system under this vision is activated by the meaning of the intentions of the premises in relation the decisions and continuously exposed the corrections and the modifications based on knowledges and new values: it is a heuristic course, of research, of learning, of decision and, finally, of action.

5 Discussion

The ERP system, referred in this paper, is commercialized as a commercial packet, it has standard modules, in order to be adjusted to the organizational processes and promises the integration of all the organizational processes. The quoted literature points out that the system becomes inflexible after its implementation and that there is a dependence of the supplier of the software for the changes that will be made necessary. The conception of the system aims to reach the "one best way", the perfect order, change the departmental vision to a process vision, from the revision of all the organizational processes, the integration, the absolute rationality and does not predict variability between the preordering given by his parametrization, and the execution.

The work developed through the ERP follows a prescription, and from the quoted characteristics it determines the course of the action, not predicting in its conception regulation for part of the user.

The ERP system doesn't correspond with the functionalist vision, because it has as principle the change of the departamental/functionalist vision to the vision of process. There is no longer an owner of the information, on the contrary, there is a unique database that feeds all the organizational processes. The system integrates all the business processes from the database, but its structure does not admit the flexibility and the recognition of informal solutions, in other words, regulation by the user.

The work developed through the ERP follows a prescription, and from the quoted characteristics it determines the course of the action, not predicting in its conception regulation by the user.

Also doesn't fit the vision of built system, for which the models of relations are built from the interactions of the subjects, are seen as separated entities from the social system.

There isn't, like in the classic model, adaptation of subject to the organization, but the conception of the social built system leads to a rejection of the organization.

ERP, also from the point of view of its structure and of its logic design, does not approach the vision process action.

However, it can't be denied the social acting around the ERP system, which in the weberian conception is translated in the action and in organizational acting. Organizational acting is constituted of a process of actions and decisions, and from a limited and intentional rationality, which produce, modify and organize itself. And, therefore, any process of organizational action is an action of regulation.

According to this, the organization can be defined as the coordination of the process of social and collective action. From the set of possible actions, the organization is not seen as being passive, but on the contrary, it is active, in function of the constructive order and always changeable on the process of collective actions. The set of actions corresponds to what is asked in the real situation of work, and that is solved through the process of regulation.

The collective action or individual acting can be developed in the heteronomy form regarding the system, in other words, total absence of regulation on the proceeding parametrized by the system. The heteronomy form can be associated to the ERP system in relation to its structure that does not admit intervention by the user.

The discretionarily indicates the spaces of action inside a ruled process, where the user is obliged to decide and choose, in a picture of dependence. And, autonomy means the capacity of the user to produce his own rules, and so the capacity of managing his own processes of action: it implicates independence. It fits individual subject as for the collective and concerns regulation of the process of action.

Maggi (2006) affirms that the practice of the discretionarily can turn out to be negative for the subject, that starts to avoid them in reason of the uncertainty and of the fact that they seems to be bigger than its capacity of facing them. Another reason is the consequence of a bad choice, which in case of the ERP can have reflexes over all the organizational processes with which it integrates itself.

If the practice of the discretionarily can reveal itself to be negative for the subject, Maggi (2006), from the other side, affirms based in the studies of Friedmann, that the autonomy is the starting point of the effective valorization of the human work, so, it influences also his well-being.

Social acting is can't be modeled and, in the social field, theoretical models cannot be produced as they are in the mathematics. And, perhaps, precisely on these points of analysis, the ergonomic approach can bring its best contributions, studying the process of regulation of the work, where and how the new consequences of the constraints appears, where and how the subject is constrained to adapt itself in this new work conditions.

However, it is necessary to realize empirical studies that makes possible to understand how occurs the process of regulation that is inherent to the activity developed through the ERP. Therefore, aims to understand what are the used strategies and how the practice of discretionary or autonomy reveals itself given the predetermination of the system.

6 Conclusion

The objective of this work is to introduce a reflection about the process of work regulation in the research orientations about the ERP system. It is undeniable the importance and dimension of ERPs systems, which allows the enterprise to integrate all the processes with range for the whole business chain, to operate in real time, to have the information in a precise and agile way, helping the enterprise to remain competitive in the market that it act.

However, vast literature has been produced searching, analyzing and bringing contributions to the improvement of the performance of the systems ERPs, which goes from methodologies of choice of the supplier of the system, passing by the process of implementation, the impacts on the organization, but it does not analyses the aspects related to the regulation of the process of work.

This analysis is relevant, since the system ERP puts new challenges in the organizational acting, what in the words of Maggi (2006), is not modeled and does not follow the same logic of conception of the system.

This article suggest, through the argumentation presented here, the realization of empirical research that pursues to identify the mechanisms of regulation of the process of work to attend what is asked in the situation of work mediated by the system ERP.

Therefore, it pursues to understand which are the used strategies and how they reveals themselves in the practice of discretionarily or autonomy to attend what is asked in the situation of work mediated by the ERP, faced by the predetermination of the system.

References

ALADWANI, A.M. (2001) Change management strategies dor successful ERP implementation. Business process Management Journal, v.7, nº 3, p. 266-275.

BIO, S.R. (1996) Sistemas de Informação – um enfoque gerencial. São Paulo: Atlas.

CALDAS, M. P.; WOOD Jr., T. Modas e modismos em Gestão: pesquisa exploratória sobre adoção e implementação de ERP. Disponível em: <http://www.informal.com.br/artigos/OLS02.htm>. Acesso em: 12 set. 2004.

DAVENPORT, T.H. (2002) Missão crítica: obtendo vantagem competitiva com os sistemas de gestão empresarial. Porto Alegre: Bookman.

DAVENPORT, T.H.; MARCHAND, D.A.; DICKSON, T. (2004) Dominando a gestão da informação. Porto Alegre: Bookman.

DERY, K; GRANT, D; HARLEY, B.; WRIGHT, C. (2006) Work, organisation and Enterprise Resource Planning systems: an alternative research agenda. New technology, work and employment. (ISSN 0268-1072).

GAMBÔA, F.A.R.; CAPUTO, M.S.; BRESCIANI FILHO, E. (2004) Método para Gestão em Riscos em Implementações de Sistemas ERP baseado em Fatores Críticos de Sucesso. Revista de Gestão da Tecnologia e Sistemas de Informação. Journal of Information Systems and Technology Management. Vol. 1, No. 1, pp. 45-62 ISSN online: 1807-1775. Disponível in: http://www.revistasusp.sibi.usp.br/pdf/jistem/v1n1/04.pdf. Acesso em 23/01/2012.

HABERKORN, E. (1999) Teoria do ERP – Enterprise Resource Planning. São Paulo: MAKRON Books.

JESUS, R.G., OLIVEIRA, M.O.F. (2007) Implantação de sistemas ERP: tecnologia e pessoas na implantação do SAP R/3. Revista de Gestão da Tecnologia e Sistemas de Informação, v.3, n.3, p. 315-330.

LAURINDO, F.J.B.; MESQUITA, M. A. (2000) Material requirements planning: 25 anos de história – uma revisão do passado e Prospecção do futuro. Gestão & Produção, v.7, n.3, p.320-337.

LIMA, M.S., CARRIERI, A.P., PIMENTEL, T.D. (2007) Resistência à mudança gerada pela implementação de sistemas de gestão integrada (ERP): Um Estudo de Caso. Revista Gestão e Planejamento. v.8, n.1, p.89-105, jan./jun.

LUDMER, G.; RODRIGUES FILHO, J. ERP e Teoria Crítica: Alertas sobre os riscos de uma "disparada" para um novo tipo de Iron Cage. Disponível em: <www.fgvsp.br/iberoamerican/papers/0115_ERP_iberoamericana_duplo.pdf> Acesso em: 13/09/04.

LUDMER, G., FALK, J.A. (2007) Dinâmica das Interações entre ERP e Conhecimento Organizacional na Pós Implementação: um estudo de caso interpretativo. Revista de Gestão da Tecnologia e Sistemas de Informação. Vol.4, n. 2, p.151-174. Disponível em www.scielo.br/pdf/jistm/v4n2/03.pdf, Acesso em 24/02/2012.

MAGGI, B. (2006) Do agir organizacional: um ponto de vista sobre o trabalho, o bem-estar, a aprendizagem. São Paulo: Edgar Blücher.

MENDES, J.V.; ESCRIVÃO FILHO, E. (2003) Sistemas Integrados de Gestão (ERP) em pequenas e médias empresas: um confronto entre a teoria e a prática empresarial. In SOUZA, C.A.; SACCOL, A. Z. Sistemas ERP no Brasil (Enterprise Resource Planning): Teorias e Casos. São Paulo: Atlas.

MENEZES. M.T. (2002) Efeitos na medição de desempenho após a implementação do ERP: Estudo de Casos. 167 f. Dissertação (Mestrado em Engenharia de Produção) – Universidade Federal de São Carlos. São Carlos.

NAH, F.F.; LAU, J.L.S.; KUANG, J. (2001) Critical factors for successful implementation of enterprise systems. Business Process Management Journal, v. 7, nº 3, p. 285-296.

PADILHA, T.C.C., MARINS, F.A.S. (2005) Sistemas ERP: Características, custos e tendências. Revista Produção, v. 15, n.1, p.102-113. jan/abr.

PEETERS, J. (2009) Early MRP Systems at Royal Philips Electronics in the 1960s and 1970s. IEEE Annals of Computing Published. abr-jun, p. 56-69. Disponível em http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5070066. Acesso em 29/01/2012.

PRADELLA, C.A.; SILVA, W.R. A evolução das Cadeias de Suprimentos e a Contribuição do Sistema ERP. Revista Gestão Industrial, v. 1, n. 02: p.p. 155-168, 2005.

RAMOS, A.S.M., MIRANDA, A.L.B.M. (2003) Processo de adoção de um sistema integrado de gestão (ERP): uma pesquisa qualitativa com gestores da Unimed/Natal. XXII Encontro Nacinal de Engenharia de Produção, Ouro Preto, MG.

ROBINSON, B., WILSON, F. (2001) Planning for the market? Enterprise Resource Planning systems and the contradictions of capital. Database for Advances in Information Systems. New York, Fall, In: LUDMER, G., RODRIGUES FILHO, J. ERP e Teoria Crítica: Alertas sobre os riscos de uma "disparada" para um novo tipo de Iron Cage. Disponível em www.fgvsp.br/iberoamerican/papers/0115_ERP_iberoamericana_duplo.pdf. Acesso em 16/09/04.

SANTOS, A.R., CASTILHOS, J.T., BARCELLOS, P.F.P. Percepção da Mudança Organizacional na implantação de um sistema ERP: um estudo de caso em uma empresa do ramo automotivo. VIII Simpósio de Excelência em Gestão e Tecnologia, 2007.

SACCOL, A. Z.; MACADAR, M. A.; SOARES, R. O. (2003) Mudanças Organizacionais e Sistemas ERP. In: SOUZA, C.A; SACCOL, A. Z. Sistemas ERP no Brasil: (Enterprise Resource Planning) Teorias e Casos. São Paulo: Atlas,.

SOUZA, C.A.; SACCOL. A. Z. (2003) Sistemas ERP e seu Histórico. In: SOUZA, C.A; SACCOL, A. Z. Sistemas ERP no Brasil: (Enterprise Resource Planning) Teorias e Casos. São Paulo: Atlas.

TERSAC, G., MAGGI, B. (2004) O trabalho e a abordagem ergonômica. In: DANIELLOU, F. A ergonomia em busca de seus princípios: debates epistemológicos. São Paulo: Blücher.

WEBER, M. (1999) Economia e sociedade: fundamentos da sociologia compreensiva. Tradução de Regis Barbosa e Karen Elsabe Barbosa. Editora Universidade de Brasília: São Paulo: Imprensa Oficial do Estado de São Paulo,. 586 p.

WOOD JR, T.; PAES DE PAULA, A.P.; CALDAS, M. P. (2003) Despindo o Big Brother: Sistemas Empresariais e Totalitarismo Corporativo. In: SOUZA, C.A; SACCOL, A. Z. Sistemas ERP no Brasil: (Enterprise Resource Planning) Teorias e Casos. São Paulo: Atlas.