

## **Information Systems and Modernization of Organizations: A Flawed Case**

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### **Abstract**

Information systems development and implementation practices at ABC Ceramic Company reflect techno-scientific and economic reasoning that form the foundation of the western modernity with underlying positivist approach. This resulted failures in information systems development and implementation projects initiated by ABC Company. The study reveals that information systems should be developed taking into considerations the social contexts of organizations in Sri Lanka. This is illustrated using an in-depth case study.

### **Introduction**

Information systems development and implementation practices in organizations in Sri Lanka have been developed under the combination of techno-scientific and economic reasoning that form the foundation of western modernity with underlying positivist ideology (Gunatunge, 2002). Western modernity is based on the premise that human conditions can be improved by reason alone. This stream of thought has been transferred to organizations in Sri Lanka through various steering media such as training programs, education, expert knowledge, textbooks, consultancy projects, professional organizations and associations, and now Internet technologies.

The positivist approach to information systems has often ignored the idiosyncrasies in organizations in Sri Lanka. This non-reflective positivist approach resulted failures in information systems development and implementations projects in organizations in Sri Lanka (Gunatunge, 2002; Williams & Gunatunge, 2000a J Williams & Gunatunge, 2000b). Moreover, these positivist approaches have failed to appreciate the alternative ways of perceiving the value of information systems development and implementation in the context of Sri Lanka. This is epistemologically

untenable. Therefore, it cannot be considered as a rational approach, which focuses on knowledge in the social contexts of systems development and implementation projects. In this paper, drawing insights from the critical social theory, particularly work of Habermas, I challenge the western techno-scientific and economic reasoning as the rational approach to information systems development and implementation practices in organizations in Sri Lanka and argue for a need to shift away from the universalistic rational approach to a more contextual notion of rationality arising from the social context of organizations in Sri Lanka. I illustrate these concepts using an in-depth case study conducted in a privatized ceramic company in Sri Lanka.

### **Methodology**

The methodology used in this study was a conceptualized, interpretive one with the techniques of critical case study methods. As such, I carried out an in-depth case study at ABC Ceramic Company (ABC) of Sri Lanka to reveal empirical and interpretive understanding of information systems development and implementation practices. Ontologically, research lies within the subjective reality of the social world. Epistemologically, it is based on the replication of theory as against the generalization of the positivist perspective. Methodologically, it adopts (de) constructionist position as against the hypotheses testing in the positivist perspective to study social phenomena.

### **Research Method**

I employed critical case study method for the study (see Myers, 1997). Case studies contribute in important ways to our knowledge about information systems development and practices (Yin, 1994). Case studies arise out of a need to understand and explain complex phenomena (Remeneyi et al., 1998). The case study method is being used increasingly as a qualitative research method in information systems research to explain the contexts within which systems are being developed, implemented and used (Darke, Shanks & Broadbent, 1998). It is the most common qualitative method used in information systems research (Dark et al., 1998). Yin (1994, p. 13) defines the scope of a case study: “ a case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used”.

### **Research Site, Research Participants, Data Collection, Documentation, Validation, and Analysis**

The research site chosen for this study was the ABC Ceramic Company. In order to obtain a balanced view about information systems development and practices, a range of participants from the senior managers to shop floor employees were interviewed. These participants include, Chief Executive Officer (CEO), Assistant General Manager (AGM), Export Manager, Production Manager, HRM Manager, Quality Control Manager, Maintenance Managers, Engineers, Chief Accountant, Chief Internal Auditor, Assistant Managers and Supervisors in all the functional departments, MIS Manager, bookkeepers, Data Entry Clerks, Heads in the ware houses, union leaders, users of information systems and non user shop-floor employees. Additionally, former CEO and the HRM Manager of the ABC were also interviewed to understand how they perceived the development and implementation of information systems by the ABC.

Interviews were conducted using a non-directive technique which allowed participants to focus on specific issues but permitted them the freedom to expand on areas of personal interest and issues. Participants were encouraged to explain the development and implementation process through critical incidents, episodes, examples, and metaphors that are critical, in their views, to shaping information systems development, implementation, and use.

Some 50 personnel were interviewed in the three phases of interviews. The objective of the first phase was to understand the issues of information systems development, implementation, and practice and to become socialized into the organization and research participants. The first phase took three weeks to complete.

The second phase of interviews were focused on asking questions regarding the issues identified in the first phase of interviews. Information was sought about the history of information systems development and implementation focusing on issues that influenced and shaped this development and implementation. Attention was given to discovering how and why and in what ways information systems development and implementation contradicted with the social reality of participants in the organizations. The second phase of interviews took another month to complete.

The objective of the third phase of interviews was to identify some unclear information and to secure views from interviewers on the issues

identified in the first and second phases and to further validate data. The third phase took another month to complete.

Interviews were documented. Each interview lasted one and half-hours to two hours. Interviews conducted using Sinhala were paraphrased in English. Crosschecking was achieved by comparing documents, financial reports, policy reports, minutes, memos, and observations. In this way, the triangulation of data was obtained. Finally, a detailed case description was prepared and these data served as the basis for critical analysis. Data analysis was performed by iterating the theoretical constructs of critical social theory and social contexts of Sri Lanka with the empirical data.

### **Critical Social Theory of Habermas**

The basic question Habermas grapples with is how to understand modernity by drawing jointly on the resources of philosophy and the social sciences. Habermas is a rationalist in that his project is to ground a balanced practice of reason in intersubjectivity rather than in the individual subject. By balancing instrumental rationality with intersubjective communicative interaction, he provides a positive platform from which to apply social theory. The two are separate: “communicative action is a system of reference that cannot be reduced to the framework of instrumental action” (Habermas, 1984, 1987b).

Having gone beyond his early typology of human interests - the technical (control) interest, the practical (ethical) interest, and the emancipatory (self-reflection) interest - within his notion of balancing instrumental action (in technological rationality) with communicative action. Instrumental action is that which treats the others and nature as instruments to achieve set goals. Communicative action is self-reflective, inter-subjective, mutual understanding and cooperation towards truth, freedom and justice. Communicative interaction is that type of structured human activity involving language and reflexivity necessarily within a moral framework (Held, 1980, p.259). In a nutshell, a balanced rationality would take account of all areas of human interest and action.

Habermas has developed his notion of a liberating reason by giving fundamental insights into the unconsciously understood lifeworld and into the nature of an undistorted communicative action (Dews, 1986, p.151). The use of balanced reason in human affairs can be freed from its overtones of complicity in positivist, technocratic, bureaucratic, hegemonic domination.

Crucial to critical theory is reflection and self-understanding. He commends self-reflection as this “leads to insight due to the fact that what has previously been unconscious is made conscious in a manner rich in consequences...” (Habermas, 1984). He foresees a situation in which a balanced rationality, or liberating reason, can occur. In this, communication is free of domination; self-reflection and practical action fruitfully combine in democratic political awareness and action; people think and act in a balanced rational way to determine the shape of their own lives individually and in community in a fully inter subjective way. Thus communicative action complements instrumental action as people, groups and nations discourse and act in a balanced rational approach (Pussey, 1987, p.120).

Every human group has a lifeworld. Lifeworld understandings are the background knowledge that is shared by members of the group. This includes common understandings - “what everyone knows” - as well as common beliefs and feelings. Language is a part of lifeworlds. Particular colloquialisms can be part of group lifeworlds. A lifeworld is “an implicit knowledge that can not be represented in an infinite number of propositions; it is a holistically structured knowledge, the basic elements of which intrinsically define one another; and it is a knowledge that does not stand at our disposition, inasmuch as we can not make it conscious and place it in doubt as we please.” (Habermas, 1984).

Every human has lifeworld understandings, which may differ from group to group. Even to be verbally understood in a group means that some lifeworld understandings must be common. To be fully accepted by a group one must share lifeworld understandings. Furthermore:

... each actor draws from a common stock of knowledge which is provided by a cultural tradition shared with others. It is this background knowledge which represents the context of the lifeworld, and in which any communicative interaction is embedded ... (Habermas, 1980, p.129)

Habermas argues that, with the growth of industrial society in science, technology and bureaucracy, reason itself is now used in a narrowly instrumental way. Reason is no longer liberating, as it was in during the Enlightenment, when thinkers used reason to expose the oppression and debased authoritarianism of the decadent European monarchies and institutional religions (Park, 1991, p. 174). Reason, Habermas (1987c) contends, is no longer used for discovery, or to generate meaning or values. Rather, reason is now used as a means of a new oppression and

authoritarianism with modernity characterized by positivist science and dominating technocratic consciousness.

For Habermas, the new social conflicts, which theory must address are the dysfunctional social reproduction of society itself. His theory attempts to resurrect a major theme of the enlightenment - that of providing a potentially empowering theoretical framework for a balanced rationality within public debate. This could, he hopes, be part of the process of enabling individuals, groups and whole communities to free themselves from coercion, oppression and domination by destructive hegemonic ideologies. Such an ideology is technocratic consciousness in advanced capitalism marked by technocratic and instrumental solutions. Questions of justice, or of freedom, or of truth seem increasingly unreal as economic rationalism defers to technical solutions to guarantee minimum welfare, manage the economy and sustain economic growth. The end result of technocratic consciousness is a society autonomously governed by technical cybernetic systems control mechanisms concealing the dominating interests of certain groups and classes (Held, 1980, p. 264-5). These concepts are elucidated referring to an in-depth case study conducted at ABC ceramic company in Sri Lanka.

### **ABC Case Description**

This case study drew from the experience of deployment of an information systems network or ISN at ABC Ceramic Company in Sri Lanka. ABC Ceramic is a public liability company which manufactures and markets ceramic tableware mainly to the international markets. Major shareholders of the company are World Porcelain Inc., and Porcelain Trading Company of the USA. American companies own 45% of shares, the Employees' Trust Fund possesses 17%, with balance of 38% remaining in the hands of employees and general public. Collaboration with international business partners in America was considered as a turning point of the company history. The company was expected to incorporate American technology and marketing expertise blended with Sri Lankan craftsmanship, design and tradition, to create some of the finest ceramic ware.

ABC was established as a public corporation in 1984 and was privatised in 1990. The company was converted to a public liability company in July 1994 and listed in the Colombo stock exchange in February 1995. A senior manager stated, "the government legitimised and rationalised the privatisation of ABC with the need to improve the production through modern technology and information technology (IT)".

The nature of manufacturing process of tableware is highly complex undergoing several stages before the finished goods are dispatched to the stores. The nature of the entire business requires carefully planned and well-managed quality control systems. The assistant general manager stated, “my responsibility is to organise production to prepare the quality required in time to come above the expected quality level”. Production is conducted in batches and the products are manufactured according to the different design requirements of agents in international markets. Agents change their design requirements from time to time based on the needs of customers in their markets. Export marketing manager stated, “our business is quite different. Particularly, older customers want to see designs physically. They place the orders manually than through computers”. The tableware is highly labour-intensive industry where each and every order requires a careful skilled-worker attention from raw material through work-in-progress to the final products.

The company employs about 975 personnel; 10 senior managers, 40 executives (middle level managers including assistant managers), 20 supervisors (shop-floor level managers), and 935 in other categories such as clerks, sales girls and workers. The majority of employees were recruited from the surrounding areas as the production process runs on shift basis.

The management practice at ABC represents old age corporation culture where most of the senior managers are reluctant to use the state of art technology particularly, information technology in their work. An assistant manager in the quality control division stated, “senior managers do not take interest to implement information technology because most of them are illiterate in IT and therefore reluctant to work with new technology”. They have been trained in a bureaucratic culture buttressing the status quo. An assistant manager stated, “here still appears to have the corporation culture where bureaucracy is dominated”. Moreover, junior managers and other employees joined the company were barely trained in the use of computers at work. Human resource manager stated, “generally, many people including the MIS manager were not acquired relevant skills to work with computers”.

The attitude of some senior managers and other employees towards the information systems technology was pessimistic. For example, export marketing manager stated, “if we are getting information [manually processed] to perform our duties, why we need to worry about on line technical systems. Just talking to managers in other sections, I can quickly get any piece of information”. Informal communication was predominant in every day communication and practice. It is embedded in lifeworld context of

employees at ABC. They were not exposed to a computer environment. As a result, they have a fear of losing their importance within the organization if the system is fully automated and information become available online. Human resource manager stated, "employees are fear of losing their importance within the organization. Certain employees use information to maintain their power over others. These are major obstacles we have to introduce fully computerized systems". Information sharing via technological systems such as information network was largely unknown to the ABC management and rest of the employees as they were guided by the bureaucratic systems. It is important to note that passive attitude of some senior managers and employees at ABC to accommodating the technical innovation in the course of their work, and their unwillingness to accept changes in their broader work conditions has annihilated their momentum for change.

The first experience of using computers at work by ABC was 1993 where the company purchased a software package from a local vendor. It developed batch mode applications for the processing of payroll applications within the accounting department. However, these applications have been inefficient and in many cases they worsened rather than improving the payroll processing. The chief accountant stated, "we had hell of problems with the pay roll system. It was not user friendly. Some times pay sheets generated using the system were wrong".

In late 1995, adhering to the technological commitment and the modernization efforts, the company purchased an information system network (ISN), namely "COMET from a local software provider to "modernize" the manufacturing and distribution activities of ceramics at ABC Company. The company had spent about Rs. 1.2 million to acquire the ISN.

After a few trial runs, it was put into operation in 1997. A German Company had originally developed the software package. The assistant internal auditor pointed out that "the objective of the 'COMET' system was to link all the areas including financial accounting, inventory control, sales invoicing, purchasing and finished goods into an online system to provide information for relevant managers for quick decision making".

The idea of introducing information network was initiated by the former CEO's efforts for the modernization of the company. As he pointed out "I wanted to improve the efficiency and effectiveness of ABC through the application of information technology". The decision to acquire the 'COMET' was made by a previous chief internal auditor without consulting users and managers in other divisions, who felt slighted.



Initially, it was expected to integrate all the departments into an online system but a system study identifying real user requirements had not been conducted. As pointed out by many user managers and other employees in the export, planning, quality control, printing and engineering divisions, “the chief internal auditor gave requirements for the new system”. Employees were not given any training about the use of ISN nor they were involved in the development and implementation of it. The production manager stated, “our information need is still there. We don’t use the network because we don’t know how to use it. Neither we were given training nor we were consulted before installing such a system. Software developers did not visit us and ask what information we need”. The chief accountant, who was not consulted for her views before purchasing the system, expressed her frustration as follows.

The system was supposed to integrate, among others, many accounting activities but we [the accountants] were not consulted. No other user departments were consulted to identify their real requirements too. We wanted a system to closely monitor and maintain accurate accounts of the company. We don’t have a control over certain sections such as stores. He [chief internal auditor] had a fair knowledge about computing but he [chief internal officer] should have asked us before bringing such a complicated system.

The MIS division was created in 1997 under the supervision of the CEO within the overall management structure of the ABC. It was located within the accounting department. A junior programmer and a management trainee are working in addition to the MIS manager whose time is devoted more to cost and management accounting activities than to MIS. The company has not gained experience in in-house development of systems nor has it adequately employed sufficient personnel to cater for the needs of the end users. The MIS manager divulged, “the CEO, planning, supplies, export and audit departments ask information from us regularly but we can’t give them because the network is not properly functioning. The system is not designed in such a way to give information the company wants”.

The term Management Information Systems (MIS) was largely unknown to the ABC management and there was neither a separate department nor a manager for MIS until 1997. The focus of MIS was and until up now is on data processing rather than information. Generally, all the users were unhappy about the COMET information network. For example, the new CEO expressed his great dissatisfaction with the existing

information system as, “the company is still producing long elaborate reports, which comprises irrelevant information for decision-making. While I am sitting here, I must be able to retrieve information through the online system than calling to sections asking for information or reading long elaborate reports, for example, what is the production today? How the company is moving? ... and soon”.

### **ABC Case Analysis**

As pointed out by the internal auditor and the CEO of the ABC Company, the COMET system was expected to link many operations including manufacturing, production scheduling, maintenance, financial accounting, inventory control, sales invoicing, purchasing and finished goods into online system to provide information for relevant managers for quick decision making. It sought to organize new ways of sharing knowledge between various departments and functions. It emulated to design new processes of interaction between ABC and its employees. Therefore, it can be argued that ABC introduced information technology and information systems to change the organizational socio-culture. Senior management legitimized the introduction of ISN in line with improving the efficiency and the effectiveness at ABC. For example, the export manager stated, “the ABC’s major challenge is to develop competitive position in foreign markets through the development of information technology”. However, the new development and implementation of information systems contradicted with the already established socio-culture at ABC.

In this new approach, senior management considered information as currency to be aided in decision-making to gain objective power in the ceramic industry. To do this, the senior management expected to gain objective information on employees’ performance and the overall performance of ABC using information systems and information technology. For example, the MIS manager explained the objective of integrated information system: “the idea of introducing integrated information system was to monitor performance of each department closely and control the overall operations of the company. As the chief accountant stated, “we don’t have a control over stores and we don’t receive information online to see how they are doing their work at stores”. The underlying approach was to employ scientific and technical improvement of management control within positivist ideology.

A German Company had originally developed the COMET information systems network. The COMET was a remarkably technology-driven

design of the operations for each task domains of ABC and had implemented at ABC in early 1997. The new information systems network or ISN and the processes it would support were expected to improve the company's efficiency and effectiveness. If the ISN were successful, then ABC's management believed that the CEO's modernization efforts would be achieved. However, ISN did not succeed. It was constrained by various socio-cultural, economic and political forces. Indeed, the whole range of "modernization" initiatives of the CEO waned and the new information sharing system lost its major champion, the CEO.

ABC followed an ad-hoc approach in developing ISN. For example, the Chief Internal Auditor gave information requirements for the ISN development. Consider the following interview quotes of various user managers. Assistant general manager said, "No body came here and identified our requirements". Planning manager stated, "Users were not participated in the system development stage and they were ignored by the software developers". A shop-floor supervisor stated, "We don't use the computers and network because we don't know how to use it".

The responsibility of development of ISN was left with an outside developer while the implementation of it was entrusted with a cost accountant in the accounting and finance department. The ISN reflected the interests of senior management to modernize ABC. It reflected techno-scientific and economic rationality of senior management of ABC. Users and other employees were ignored. Developers followed purely technical and instrumental approaches considering users and other employees as passive entities able to be manipulated by systems developers and senior management. Informal communication and work arrangements were ignored. Developers and senior management objectified the lifeworld of users and other affected parties by not allowing communicating their value choices and requirements as design ideals in ISN development.

This approach was antithetical to the historically established socio-cultural value systems of employees at ABC. The new ISN introduced new language, rules, procedures, schedules, work and shift arrangements, recording, and reporting transactions for work. User managers and employees drawing meaning from their lifeworld contexts opposed the introduction of the ISN. They opposed the ISN by not working with ISN and continuing their work with manual systems. Instead, they wanted, more training and more computers as well as more participation in the process of decision-making related to ISN development.

Consider the following quotes of interviews of user managers and shop-floor employees. Shop-floor supervisor stated, "I don't use the computers and network because I don't know how to use it. I was not given any opportunity to take part in the development of it. Therefore, I don't know about it". A supervisor in the firing department stated, "I don't have knowledge about using a network. Somebody should come here and tell me how to use it. Its very easy and convenient for me to work with manual systems". Assistant manager in the quality control department stated, "Network use is nil here because users are not familiar to use it. Management practices here are very primitive".

User managers and other employees wanted to know more about the information system and integrated their knowledge in the development of information network through their participation. Management instead of stopping and reflecting responded to this view by pushing ahead with ISN without employee participation. The senior management believed that the implementation of the ISN is essential to translate staff behavior in line with the demands for improved efficiency and effectiveness. In other words, ABC management considered only the techno-scientific and economic rationality in the development and implementation of ISN. It can be argued that ABC management through the development of ISN attempted to convey one particular set of values, technical and economic rationality, dominated over others.

However, for employees, efficiency of the existing manual systems depended on a whole series of human decisions and judgments located in the lived experience and historical contexts of employees' lifeworld. For example, "we receive various reports manually from the planning department. They are very easy to understand", said supervisors in planning, printing and firing departments. "Sometimes, just talking informally to friends in other sections, I can get some information to prepare planning schedules for each department without using the formal channel of communication", said the planning manager. They accommodated their tacit understanding and knowledge in everyday communication and interaction with the people in the organization. In such an environment, human interactions are socially interpreted because social reality is historically constructed. In such an environment, employees are reluctant to translate their human intentions and actions to improve efficiency in a way interpreted and used by senior management using computerized information systems such as COMET information systems network.

senior management and it was suppressed using authoritative power. Alternative ways of perceiving the value of technical innovation, which could have been manifested in the development and implementation of information technologies in the social context of Sri Lanka, were largely ignored. The actual practice of ABC did not reflect in the current practice of information systems development. The process of ISN development separated the process of generating knowledge from the practical application of that knowledge. Thus, there was no real knowledge integration in information systems development and implementation. ABC focused on operating efficiency than reinventing new form of organizations through the development of information systems using communicative action.

### **CONCLUSION**

Information systems development and implementation at ABC was not transparent to a wider stakeholder groups such as assistant managers, supervisors, and shop-floor employees at ABC so as to allow critical reflection. ABC senior management and outside consultants adopted objective positivist rationality in information systems development and practice. This rationality was clashed with the historically established socio-culture of ABC. As a result, information system network was abandoned or partially implemented with little success. Thus, modernization efforts at ABC using the information systems network was failed and did not help the CEO push to transform. ABC into an efficient and effective organization.

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