ES Implementations – A Model of Panoptical Empowerment

Say Yen Teoh
RMIT University, sayyen.teoh@rmit.edu.au

Leon Kok Yang Teo
RMIT University, leon.teo@rmit.edu.au

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Say Yen Teoh
School of Business IT & Logistics
RMIT University
Victoria, Australia
Email: sayyen.teoh@rmit.edu.au

Leon Kok Yang Teo
School of Business IT & Logistics
RMIT University
Victoria, Australia
Email: leon.teo@rmit.edu.au

Abstract

Enterprise Systems (ES) / Enterprise Resource Planning (ERP) systems implementations have been widely popular with organisations in the past century with revenues of 37.5 billion USD in 2008 (AMR, 2009). Empowerment of users is one of commonly cited benefits of ES usage. However, literature review suggests a paradoxical situation exists with the empowerment of users via the use of IT. Various researchers have attempted to address the panoptical control and empowerment controversy by attempting to explain the impact on managers and users. However, to ensure the success of ES implementation and use, it is idealistic to achieve an optimised balance for the organization to impose control on the use of IT i.e. Enterprise Systems and the empowerment benefits of IT. This study guided by the lens of panopticon control attempts to investigate the impact of empowerment and panoptical control on varying levels of users including management and the factors that assist in optimising both control and empowerment.

Keywords

Enterprise Systems, ERP Systems, Empowerment, Panoptical Control

INTRODUCTION

Enterprise Systems (ES), also known as Enterprise Resource Planning (ERP) systems refer to system packages that allow organizations to seamlessly integrate their business processes and favour information collaboration (Davenport, 1998; Presley, 2006). The prevalent use of ES in organizations is well demonstrated by the figures given by AMR Research (2009) for the leading ES vendor, SAP. According to AMR (2009) research, SAP currently dominates the ES applications market with a revenue of 1580 million USD in 2008.

Based on ES implementation studies, empowerment of users is one of the most widely cited benefits of ES use (Davenport, 2000; Sehgal and Stewart, 2004; Shang and Seddon, 2000; 2002). Especially, the ES use may potentially introduce panoptic empowerment or provide greater control and conformity for organizations (Elmes et al., 2005; Sia et al., 2002). According to literature, although existing ES research emphasised on the empowering effects of ES implementations (Elmes et al., 2005; Sehgal and Stewart, 2004; Sia et al., 2002) but according to Benders et al. (2009), little research has been conducted to explore and understand how empowerment is influenced by the ES management coupled with its impact on organizations. In view of this, this study looks at the impact of empowerment and control on the users (e.g. managers and office workers) of an organisation and identifies the factors that influence them.

This paper provides a brief introduction to ES, and also discusses the empowerment process and impacts on ES users who engage the ES on daily basis by proposing a model of panoptic empowerment via the findings of a case study conducted on an ES-adopting MNC. The next section of this paper includes a literature review, a brief description of the research method and discussion of the findings before concluding a model demonstrating the factors influencing the optimisation of empowerment and panoptical control.

LITERATURE REVIEW

Organisations implementing ES packages have to adopt the standardised business processes embedded in the software leading to an integrated business process-oriented structure (Al-Mashari, 2003). Despite its restrictions to organizations, successful ES implementations are still beneficial to the adopting organisations, in which the

use of ES would lead to various intangible and tangible benefits (Murphy and Simon, 2001; Murphy and Simon, 2002) including user and managerial empowerment (Esteves, 2009; Shang and Seddon, 2000; 2002).

In this study, empowerment is referred as "Facilitating ownership of processes and information by workers such that they will be motivated to remove constraints on production and create flexibility though organisational learning and innovation" (Johnson, 1992, p.95).

From an IT perspective, ES has the ability to empower users by transferring the control of information flow between creators and users (Sia et al., 2002). Users have increased access to information that provides them greater flexibility in their job and also allows them to make decisions that previously need to be formally referred to a supervisor or manager (Sia et al., 2002).

Common objectives of empowerment comprises process flexibility, continuous improvement and better motivation of users (Herbert, 2009). In particular, empowerment includes the notion that users have some control over their own jobs to the implication that they would have more influence over organizational activities (Sehgal and Stewart, 2004) with wider and deeper job scopes (Soh and Sia, 2004). Other similar notion of empowerment includes the sharing and delegation of power and authority to the subordinates of the organisations (Daft, 2002, cited in Elmes, 2005). For that reason, empowerment provides the basis for users' adoption and acceptance of the ES implementations (Ng and Kim, 2009).

The empowerment process begins with the active engagement of users from the early phase of ES implementation. The reason being it would enable users to develop better understanding and appreciation of the system so that they would provide clearer user requirements for better customisation of their specific needs (Sehgal and Stewart, 2004). Empowerment is directly influenced by the configuration of the ES process (Benders et al., 2009). Depending on their levels of authorisation, users may be able to access, insert or modify data in the ES. It is the authorisation configuration process that allows that ERP implementers and management to influence the individual levels of user empowerment (Benders et al., 2009).

Panoptical View of ES Implementations

The concept of *Panopticon* advocated by Foucalt (1977) has been used by various researchers (Elmes et al., 2005; Sia et al., 2002; Zuboff 1988) to understand the impact of IT in organizations. *Panopticon* is based on Bentham's panopticon – a central architectural prison cell tower with cells catered for individual prisoners. The design of the prison tower provides the ability to gaze (one way hierarchical surveillance) – observers can observe the prisoners and themselves being observed by their supervisors (Elmes et al., 2005). The surveillance needs not be continuous, as the prisoners will start to behave as if they are under constant surveillance because they are unable to tell if they are being observed (Foucault, 1977).

The concept of *Panopticon* to IT and the idea of *Information Panopticon* were introduced by Zuboff (1988) whereby IT provided the ability to survey instead of a physical tower structure. And interestingly, the idea of panopticon was later used by Sia et al (2002) as a theoretical lens to have a better insight of current contradictory results on the impact of ES implementations. Elmes (2005) suggests that the lens of panopticon control is better applied to ES in comparison to earlier technologies as ES provides organisations the capability of an integrated database that captures real time information for monitoring and tracking user actions. The concept of "panoptical empowerment" was proposed by Elmes (2005) as a means of understanding the tension between control and empowerment.

ES implementations can be seen as a technology of power that enables a much greater visibility of one's workplace behaviour (Sia et al., 2002). In other words, ES enables empowerment of its users (Shang and Seddon, 2000) by shifting the control of information flow between information creators and information users (Davenport et al., 2004; Sia et al., 2002; Siriginidi Subba, 2000). With the use of ES, users not only have a greater access to information but also have extended ability to make decisions (Davenport, 2000; Shang and Seddon, 2002) that may be formally managed by superiors (Sia et al., 2002). For that reason, researchers (Davenport, 2000; Shang and Seddon, 2002; Sia et al., 2002; Siriginidi Subba, 2000) agree that the centralisation and integral characteristics of ES implementations will lead to a greater availability of information and ultimately resulting in greater flexibility and better decision-making.

However, a paradox situation arises from the ES's ability for organisations to collect more detailed real time information and bring about a greater transparency of information throughout the organization. The transparency provided by ES allows management to monitor activities and decisions of their subordinates (Sia et al., 2002). The enhanced control brings about a greater ease for managers and peers to observe the works in the workplace (Elmes et al., 2005). Thus, ES in many ways are structured to support bureaucratic control and enforces organisational disciplines both by constraining users to follow prescribed processes with limited access to transactions based on users' roles and responsibilities (Elmes et al., 2005). Besides, ES often exert pressure on the users (Lowe and Locke, 2008) especially in the later stages where most users lost their control and thereby

directly challenged and reshaped perceptions of professional identity and roles. Hence, it generates high user resistance (Alvarez, 2008). The paradox situation or "controversy" was highlighted by Herbert (2009) whereby Hofstede (1968) questioned whether if greater control led to a loss of individual autonomy (i.e. empowerment). Hofstede (1968) argues that both elements of control and empowerment can coexists and the management primary task was to optimise control and autonomy rather than attempt to maximise both. Hofstede's argument was also supported by Simon (1991) who states that control systems used in organisations must balance and reconcile empowerment and control to avoid the over exertion of influence of one element over the other.

Limited research has been published to provide some insights on the optimisation of panoptical control and empowerment in ES implementations. Earlier research by Sia et al. (2002) has demonstrated that increased management control through panoptic visibility of organisational operations can also provide increase empowerment of users via increased access to different functionalities of the ES. Elmes et al. (2005) also highlighted that personal control may be associated with being controlled. As users are enabled to monitor others' work, this result in increased peer pressure and users who know that they are being monitored tend to be more self-disciplined.

In summary, a review of the existing limited ES literature has identified that existing studies emphasized strongly on the influence of management control on user empowerment (Elmes et al., 2005; Herbert, 2009; Sia et al., 2002), or the empowerment impact on users' role (Soh and Sia, 2004). It is obvious that there is a lack of attention given to what organizational factor/s e.g. managerial style may have an influence on the empowerment and control and how do the factors that may have an impact on the optimisation of both control and empowerment.

Motivation for Study

ES implementations are time-consuming (Bingi et al., 1999), costly and complex (Davenport, 1998; Davenport et al., 2004) investments. Even though ES market is in its mature stage, many early-adopting organizations have fully realised the potential of their ES projects (Liang et al., 2007). Empowerment of ES users is one aspect and benefit of ES adoption that will determine the success of the ES implementations (Ng and Kim, 2009). Understanding the impact of ES implementation from a panoptic control and empowerment perspective will provide organisations with a better insight on ES utilisation. Therefore this paper aims to explore the impacts of panoptic control and empowerment and their influencing factors brought about by ES implementations, with the following research aim to:

Explore and understand how panoptical control and empowerment can be optimised by organisations to fully maximise the effectiveness of ES use.

METHODOLOGY

The research strategy outlined in this paper adopts an interpretive case study methodology as advocated by (Walsham, 1993; Walsham, 1995). Case study is suitable in information systems research when a phenomenon is poorly supported by any theoretical framework, or when contextual factors need to be captured (Klein and Myers, 1999). Case study allows for the depiction of the contextual factors concerning emotion that are the focus of this study which is the development of a detailed account analysis of one or more cases.

This methodology entails the exploration of a case over a period of time by means of elaborate and in-depth data collection, usually from "multiple sources of information rich in context" (Creswell 1998). In addition, case study move away from quantitative rigor towards practicality (Murphy and Simon, 2002). The pragmatic nature of case study, grounded as they are in a narrative form featuring actors in a social context, provides a rich holistic account of studied phenomena that is perhaps more accessible and directly beneficial to the practitioner in a given field (Teoh and Pan, 2008).

In line with our research interest, we invited TA (a replicated name), one of the fastest growing public-listed housing developers in Malaysia with more than 10 years of experiences in using ICT, to participate in our study. 32 face-to-face interviews were carried out across four periodical visits within a year. To ensure quality and reliability of research, we further interpret informants' actions and statements through several informal conversations, observations, and secondary data to bring out the underlying intention of the informants and triangulate their information with other resources for validation.

Selection of informants is based on the relevance of the case, which is aimed to review the use of ICT in the company, thus informants are mostly holding influential positions ranging from the middle management, users from different departments, IT departments. Interview sessions varied from thirty to three hours with the informants' tenure ranging from two to 11 years. Interviews were conducted based on a set of questions prepared prior to the interview sessions while the choice of questions is made on the spot after ascertaining the background of the informants.

Each interview was audio-recorded and transcribed. Theme coding (Miles and Huberman, 1994) was used to analyse the data collected. Identification of themes (factors and their impact on control and empowerment) is carried out via the coding technique. Labelling and categorisation were done on data containing descriptive or inferential information to build the case study.

CASE STUDY

As one of the biggest and fastest-growing public-listed housing developers in Malaysia, TA realizes the importance of ES roles in managing its multicultural employees. To effectively manage its staff from diverse cultures working under the confinement of 23-storey building is a monumental task to handle. ES implementation and transformation to ensure the optimum management of human resources remains a critical success factor.

This company was established in 1983 and today the founder is still the controlling shareholder. From historical perspective, this company has expanded overtimes from a personal-owned company to a huge multicultural organization today.

The Chairperson is provided with daily up-to-date reliable information generated from the ES and assisted by a team of experts in the strategic decision-making processes. Just like in most organizations, it is a common practice for the Chairperson to make a decision on all matters. Once a decision or goal is set, he will entrust and empower the top-management to carry out the mission. Managers are given the flexibility to carry out their tasks with only one condition, i.e., to ultimately accomplish the responsibilities in time. Various tactics and approaches were strategised by the managers or/and heads of departments to ensure that ES users are motivated to deliver the targeted goals on or before the scheduled dates.

Since the purchase and implementation of from-the-shelf ES in 1995, TA took above five years to gradually customize its system to provide a more efficient and effective service to cater for the rising customer expectations. Presently, the customized system integrates the various departments like the marketing, credit control, finance, human resource, and customer service into a central system with a strong internal IT support.

The Use of ES

The system has greatly improved the efficiency at TA, especially during the launch of new housing schemes, in which the system is able to complete a few hundreds of sales-and-purchase (S&P) contracts within a day without any hassle. For example, with the help of this fully-automated and computerized system, ES users (sales staff) would just feed the purchaser particulars once into the system to generate copies of sales-and-purchase contracts needed. Hence, the customized ES has reduced the amount of paperwork, duplication of tasks and mistakes significantly in the marketing department.

In the case of after the signing of S & P agreements, a list of customer profiles will be created by the marketing department so that the ES users from the credit control department could generate payment reminders via the system to customers from time to time. Good working relationship is still required although data is integrated across departments. According to the Finance executive:

"I must keep close contact with the credit control department to ensure the accounts are balanced by the end of the working day. Otherwise, it will be my responsibility to solve the problem. Therefore, a good relationship with the credit control department is essential for me."

Thus, good bonding relations among departmental staff are crucial even with the integrated system in place. To ensure good working relationships within the organization, the top-management favours two-way and even multi-way communication skills among staff. Senior managers always pride themselves on encouraging ES users to work as a team and reduce politicking in order to promote harmony and job efficiency. The Deputy Vice President explained:

"When you are honest, you get to strengthen trust between colleagues… you are more likely to refer to the right person in the network for assistance…"

In addition, good working relationships across departments are also built on:

"Be friendly, respect and be polite to everyone that you come across, this is the key to build good working relationship" said by an executive in marketing department.

Appropriate management strategy is required to upgrade the productivity and efficiency from inter-departmental ES users. Here, autocratic management style is adopted to manage ES users (administrative staff) in the data-entry department. As a manager stated:

"Our administrative staff is generally have lower motivation in carrying out their routine work…to ensure their work done in time for others to process, they would need to be driven or pushed by the manager in order to complete their assigned tasks".

On the other hand, democratic management style is more suitable to disciplined and motivated staff, for e.g., ES users at the executive levels requiring more complicated analytical skills. In general, the ES users (account team members) are more responsible and dedicated and they have a sense of urgency in submitting daily financial reports to the president and top-management on time for references and decision-making. They are also generally more motivated and creative in analysing the financial data generated from the system. According to the journal ledger manager:

"I enjoy my job because my boss is not only friendly, but he respects and trusts my ability. However, to gain his trust and respect, you must show him good results and performance…"

Responding to the comment, the vice-president asserted:

"This type of employees deserve our respect and treatment as friends in order to cultivate the bonding relationships"

No doubt, ES is the pre-requisite determinant in an organization but it is the human factor especially cooperation, that is one of the key determinants for its success. In this case, it is apparent during the year-end accounts closing. According to the assistant accounts manager:

"Although we could get tasks done much faster with the system, but we still need people to work closely with one another. I'm glad that my subordinates would volunteer to stay back and help each other to make sure tasks are completed according to schedule"

The strong bond existing among department staff and managers, cultivated by top-management, would likely promote them to co-operate and maximize the use of the ES to upgrade job quality, efficiency, and effectiveness. According to one of the senior managers:

"If you know how to use the system, you could retrieve wonderful results by keying in the right code and vice versa. Therefore the bottom line is for us to make sure managers are satisfied with the management and are motivated to learn, explore and encourage their department subordinates to use the system".

To ensure high quality customer service, the customer service department is strongly supported by the top-management. A customer service executive commented:

"Where necessary, our department – the customer service department – can contact all other departments for any clarifications and verifications. Since the MD has given the directive to all employees to provide full cooperation and support to customer service in order to ensure customers' needs are satisfied and enhanced, it is easier for us to get help from other departments."

In general, TA strategically managed and stimulated the use of ES across all levels and departments to provide customer with seamless, efficient and effective services.

DISCUSSION

Evidence of perceived panopticon and empowerment and factors that impact them were interpreted from the interviews and the case study is presented as follows.

Table 2: Factors identified based on Panoptic Control and Empowerment

Management Level	Style	Empowerment	Panoptic Control	Factors
Top Management	Dictatorial	• Making strategic decisions using information generated by ES • Monitoring of overall organisational performance • Setting targets and goals	• Provided with daily up-to-date reports and forecast generated by the ES • Ability to assess different manager's performance • Ability to assess different departments collective performance	• Good working relationship • Flexibility • Strategy

Middle Management	Management by Objective (MBO)	• Generation of customised reports for business analysis • Ease of launching new housing projects	• Visibility of other departmental works via the exchange of reports, information and approvals • Ability to monitor operational user's performance	• Good working relationship • Motivation & support • Flexibility • Strategy
Operational	Democratic; Autocratic	• Allows operational users to complete hundreds of S&P contracts daily • Automated generation of payment reminders via the ES • Reduction in man hours required for administration tasks	• Timely submission and completion of data entry jobs required for the generation of data • Approval for transactions through the ES • Incorrect entry in user's work have an impact on others • Errors made are easily checked by supervisors	• Good working relationship • Motivation & support

Panoptic Control

Interviewees generally agree that there was an increased visibility with the implementation of the ES which and increases with the level of authority as shown in Table 2. The findings reinforces the concept of information panoptic control as suggested by Zuboff (1988) and Sia et al. (2002).

The highest degree of panoptic control and visibility can be found at the top management level. The daily customised reports required by the senior managers and chairperson provide them with a comprehensive top-down overview of the organisational performance. Reports can be customised to give precise information on departmental performance and be further drilled down to individual performance.

Middle management accounts that there is a greater form of visibility among their peers. Managers of different departments were able to access information directly from the ES. The finance department and manager were provided with the greatest degree of control and visibility through the implementation of the ES as all departments were required to communicate with the finance department for accounts and payments.

Control is evident in the operational-level users whereby rigid configuration of the ES does not provide users with any room for mistakes and in the event that mistakes are made, supervisors will be able to easily check the cause and personnel responsible for the mistake.

Empowerment

The findings from the case study demonstrate that most respondents in the case study believed that they had have been empowered by the implementation of the ES. All managers and users interviewed expressed that the use of ES had made their workload substantially lower and allowed them to have better capabilities e.g. decision making, transaction monitoring.

Operational users and management also highlighted that the ES provided them extra capabilities of handling more workload e.g. completion of hundreds of S&P contracts in a day which was not possible in the past. Another important aspect of operational user empowerment was found to be the automated generation of payment and reminders for suppliers and clients which had greatly decreased the number of man-hours required for the tasks.

The ease of decision making at the strategic and top management level was increased with the greater availability of information collected and generated by the ES. Traditionally, without the use of the ES, senior managers and the chairperson would require middle managers to compile information and this would take days to weeks for a customized report.

Factors Optimising Panoptic Control & Empowerment

As discussed in the literature review, a paradox arises in the use of IT from an empowerment perspective. Various strategies have been available to address apparent paradoxes and one such suggested approach was to understand the balance of control and empowerment can be achieved (Herbert, 2009; Sia et al., 2002). The effective use of the ES by the organisation lies in the ability to manage the tensions brought about by control and empowerment (Elmes et al., 2005). The approach taken in this study was to identify the factors that have an influence on the balance on control and empowerment and their impact on optimising both elements of control and empowerment. In this section, the factors identified to be helping the TA organisation achieve a balance and optimisation of control and empowerment are presented as follows:

- **Good working relationship:** A healthy working relationship between superiors and their subordinates cultivates trust which in turn helps the subordinates feel that they are not under constant surveillance or being monitored. This in turn promotes productivity and allows a greater degree of freedom in an individual's work and performance. Good working relationship also promotes interdepartmental cooperation and communications which may potentially promote the use of ES which increases productivity

- **Objective Oriented and Flexibility within Managerial Style:** Despite the top management using a dictatorial style for their management of subordinates, the top management and middle management share a commonality of incorporating an objective-oriented approach with a huge degree of flexibility to enable their subordinates to complete their tasks. Senior managers and middle managers likewise are given all the flexibility and freedom to achieve their projects or responsibilities on time. The top management are not concerned with the means and approach for achieving the targets. However, the use of the ES and reports generated still allow superiors to monitor project milestones and key deliverables with ease.

- **Motivation & Support:** Motivation from the top management is crucial to reduce user resistance to the routine panoptic tasks of using the ES. Superiors have to convince their subordinates that the use of ES is not to control or monitor their work but rather to improve an overall organizational productivity.

- **Management Styles Diversification:** The use of different managerial styles by the management of TA reflects the panoptic control brought about by the use of ES. To offset the controlling and monitoring characteristics of the ES, the management of TA opts to adopt a higher degree of control of managerial style i.e. dictatorial style for the top management with the highest degree of empowerment, on the other hand, adoption of a lesser degree of control of managerial style for the operational users that possess the least degree of empowerment.

CONCLUSION

Using the findings from the case study, a model was proposed that reflects the factors identified in optimising panoptical control and empowerment in the organization of TA after the ES implementation.
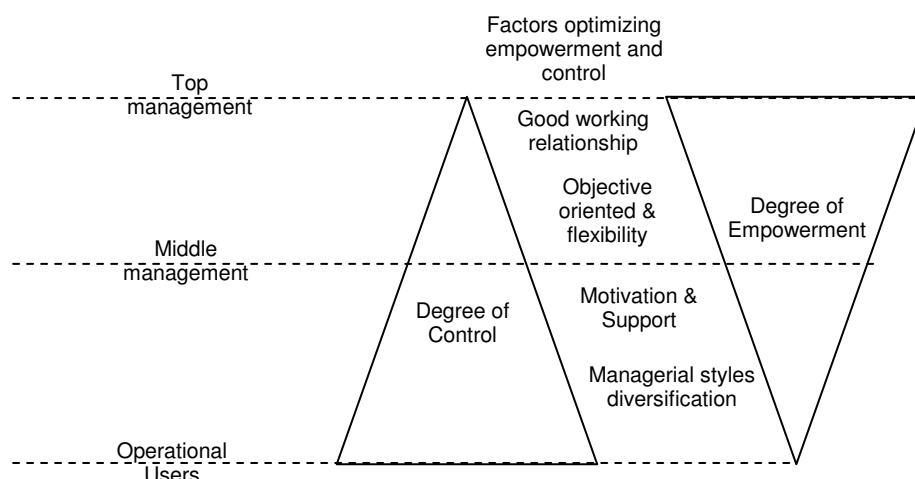

Figure 1. Proposed Model of Panoptical Empowerment

The model demonstrates that the degree of control increases down the authority structure of the organisation, whereas the degree of empowerment decreases down the hierarchical structure of the organisation after the ES implementation. This research highlights that empowerment only benefits the top management but imposes controls on the operational users.

This study has attempted to provide an insightful analytical view of the panoptical control and empowerment with an ES implementation for a Malaysian organisation. This study also demonstrates the complexity of adopting a large complex IT system - Enterprise Systems in an organization. The social-technical process of empowerment is intricately linked to an individual's performance and ultimately determines the success of the ES implementation. Due to the intricate nature of the paradox situation that arises from the implementation of ES that brings about panoptical control and empowerment, it is crucial that ES-adopting organisations should understand how to manage the control and empowerment to optimise the use of the ES.

We researched a case which in our opinion is unique that the management of an organization using an ES attempts to optimise both the panoptical controls and empowerment brought about by its ES implementation. To ensure the success –in the use of ES –from the aspect of empowering the users, organisation TA has managed to provide us with an insight on the factors that assist in the optimising of both panoptical control and empowerment. They are identified as: i) good working relationship; ii) objective-oriented approach & flexibility in management; iii) motivation & support, and iv) managerial styles diversification. The findings of this study will help address the lack of attention given to the existing research on the optimisation of control and empowerment.

LIMITATIONS & FUTURE RESEARCH

The use of a single case study limits the external generalisabiltiy of the above analysis. The dynamics of panoptic control empowerment with ES implementations and use may vary in different organisational contexts or with different structures (Sia et al., 2002). Future research should take into consideration of the structural context of organisations and the hierarchical authority nature of them.

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