

Role and Impact of Enterprise Resource Planning (ERP) System in the Broadcasting Industry

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ABSTRACT

Integrated Information systems such as Enterprise Resource Planning (ERP) offer distinct advantages for the broadcasting industry by lowering operating costs, increasing productivity rate, reducing cycle times and increasing customer satisfaction. But the lack of empirical evidence that an integrated enterprise system will positively impact broadcasting processes has mooted this study. The paper aims to explore best practices in broadcasting, emanating from an ERP or Best of Breed (BoB) environment using the three core performance measures of productivity, flexibility and return on investment (ROI). The study moderated performance measures using the technological, organisational and environmental (TOE) factors of the business environment. The findings revealed that the utilisation of the ERP system would be the better practice in terms of productivity and ROI. Further, the study has also revealed that the environmental factor is not a significant moderating variable at implementing either the ERP or BoB system. The empirical evidence confirmed a number of benefits which could be derived from ERP systems particularly for business process management in the broadcasting industry. The implication from the study is that the findings provide a basis for broadcasting organisations to harness the potential of implementing ERP systems for effective business integration.

Key words: Best of breed, broadcasting, Enterprise Resource Planning, integration, workflow

1. INTRODUCTION

Broadcasters in the region are coming to terms with not only the accelerating technological changes but also the demands of their evolving audiences and wider societies. Broadcasting systems which were once good enough for a relatively static society and conventional political, social economic milieu, find themselves up against renewed demands. In the past, broadcasters used to have the entire field to themselves, as Castells (2012) puts it. The Internet serves broadcasters in two complementary ways. Firstly, it serves to create intranets for content production and for management as a working tool for information sources and news gathering; secondly, it functions as a distribution conduit and as a component of streaming technology. With the advent of the Internet and the benefits of convergence, the field of broadcasting is open to anyone who wants to become an independent content producer.

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The convergence of technologies promoted non-linear communications while digitalisation has pushed for the enhancement of broadband Internet that has enabled the entry of computing and telecommunication services as new broadcasters (Globecast, 2013), challenging what was traditionally the domain of radio and television as we know them. Convergence, digitalisation and broadband have given rise to online media, transforming broadcasting services into an integrated IP-based convergent service. What used to be broadcasting's operating backbone or the use of micro wave links for transmission and third party infrastructure for dominant broadcasting are becoming a thing of the past because broadcasters have to compete and produce content for triple play delivery platforms to multiple screens as well as to exclusive over-the-top services (Globecast, 2013). For the broadcasting industry to stay ahead of the competition from Internet and mobile platforms, it is essential to maintain its leadership position by harnessing technologies that enhance their business integration. Under these circumstances, both practitioners and researchers have begun to explore the types of enterprise software system which can effectively manage their business operations to help broadcasters reduce costs whilst increasing productivity and quality. The types of software systems which are closely connected to improving the business processes among organisations are Enterprise Resource Planning (ERP) or Best of Breed (BoB) system (Zhu *et al.*, 2003). The challenge for traditional broadcasters now and beyond are two-fold: (i) the choice of best practice in the broadcasting environment ; and (ii) how to sustain and offer their depleting audiences faster, reliable choices of content and value added services without sacrificing production qualities that sustain the professionalism of broadcasters.

1.1 The Problem

Broadcasting organisations view both systems as strategically important and as sources of enhancing organisational competitive advantage. The literature lacks empirical evidence that examines an integrated enterprise software system that positively impacts broadcasting in terms of their operational productivity, flexibility and cost. This study explores best practices in broadcasting, emanating from an ERP or BoB environment using the three core performance measures of productivity, flexibility and return on investment (ROI), as an attempt to fill this gap in empirical evidence.

Specifically, the objectives of the study are:

- To investigate whether an ERP system would outperform a BoB system on operational productivity, flexibility and cost in meeting organisations' business processes
- To determine whether operational productivity, flexibility and cost resulting from engaging ERP or BoB system is moderated by the technological, organisational and environmental (TOE) factors.
- To explore best practices in broadcasting, emanating from an ERP or BoB environment using the three core performance measures of productivity, flexibility and ROI.

2. LITERATURE REVIEW

Production techniques at broadcasting stations are moving closer to IP based software based workflow. The workflow process is getting more and more non-linear. The normal

chain of linear pre-production, production, post-production and final presentation does not entirely accommodate or meet new media audiences' expected experience. In the current production workflow, all meta-data has to be first gathered even before writing the script. Effectively in a non-linear work flow, a team of producers have to plan for and line up a host of production required materials ahead of actual production day, such as secure airtime, programme distribution channels as in web or cable etc., multi-screen, mobile, smart devices repurposed version, national and international feeds, internal content, live action, audience participation, creativity inputs, rehearsal and meta-data for over the top production, and repurposing content for further distribution. Modern infrastructure include feeds-ingest, edit and play-out machines built into an integrated production environment that would enable journalists, news editors and programme producers to seek and access the best of the materials gathered locally and from global sources.

Enterprise systems (ES) cover a wide range of business functions and are regarded as one of the most complex and costly for implementation in organisations which could impact the productivity, flexibility and cost factors (Mabert, Soni and Venkataramanan, 2003). The two predominant approaches currently available for ES are ERP and BoBs (Ageshin, 2001). ERP is the implementation of a software solution from a single vendor that provides interoperability and interconnectivity across the chain of operations for broadcasting whereas BoB is the implementation of multiple software applications from different vendors, each providing optimal functionality for operations and creating interconnectivity within a specific chain of operations (Zhu *et al.*, 2004).

Many aspects of business process require detailed consideration during the implementation phase. The need for ES to be aligned and fitted with the overall organisational strategy of increasing efficiency to produce a satisfactory ROI is important (Ettlie *et al.*, 2005). In the past, organisations have failed to maximise the return on investment using enterprise software systems due to poor implementation strategy (Closs *et al.*, 2008). Even multinational companies such as Aerogroup, Boeing, Dell, and Foxmeyer were plagued with ES implementation crises (Ragowsky and Somers, 2002). Therefore, it is crucial that the chosen ES, the modules implemented, the modifications and customisations undertaken, and the link to existing legacy systems, be carefully considered. The final implemented design of the ES should then be able to effectively support the company's requirements, constraints, and be flexible to the peculiarities of the organisation. For example, Berry and Hill (1992) stressed the need for manufacturing planning and control systems to be aligned to productivity while Gattiker and Goodhue (2005), presented a model of the organisational impacts of ES once the system has gone live based on flexibility and costing. Enterprise systems are complex and their implementation can be a challenging, time consuming and an expensive undertaking for any organisation (Davenport, 1998; Garmus and Herron, 2001; Mabert *et al.*, 2003). At the same time there is no guarantee of a successful outcome, even with significant investments in time and resources (Hsu *et al.*, 2008). Therefore, it is crucial that the chosen ES, the modules implemented, the modifications and customisations undertaken and the link to existing legacy systems be carefully considered.

When designing an ES for an organisation, it is necessary to determine whether the system is adapted to the broadcaster's processes, or whether the business processes are modified to fit the system. It is an important decision that can have long-term ramifications

on the productivity of the system (Shin, 2006). Similarly, whether to maintain existing legacy systems whose processes cannot be replicated in the new ES, as well as their potential interlink with the package of the new ES, is an informed choice that needs to be made by both the vendor and the organisation. Furthermore, the selection of the system provider, and the implementation of a single system or the practice of a BoB approach needs to be well thought out as it involves a check on flexibility (Weil, 2007). Due consideration to the above mentioned factors should result in an ES that is ideally suited for the organisation, fitting its unique business processes and needs (Garmus, and Herron, 2001). However, depending on the organisation's situation, the structure of the system can become quite complex; for instance, when legacy systems have to be interlinked with new components (Weil, 2007). As ES evolve and grow over time, their complexity can increase exponentially. Based on past studies, ES has contributed towards productivity, flexibility and cost and when decisions to implement ES are carefully evaluated to ensure it meets business process needs (Garmus and Herron, 2001).

2.1 An ERP System

An ERP system in a broadcasting organisation, characterises integrated enterprise applications that are acquired from a single vendor and provide for broad functionality and interconnectivity across all departments of the organisation (Dempsey and Griffin, 2007). This type of enterprise application can provide an opportunity for the broadcasters to eliminate inefficiencies through the implementation of new work systems (Light *et al.*, 2001), assist in the creation of work processes that might have not otherwise been considered or remotely achievable (Chester, 2006; Deep *et al.*, 2008). There are significant benefits for broadcasters that have otherwise informal or 'outside' the operational processes, as the ERP system can provide for wider structure and innovative processes.

When implemented correctly, an ERP system offers operational efficiencies, reduced staffing, and the possibility of improving information technology capability seamlessly through additional vendor supplied upgrades (Light *et al.*, 2001). The benefit of implementing an ERP system can be great as technical relationship needs to be maintained with just one vendor. The vendor provides services to install, commission, maintain and upgrade the system and as such, the organisation does not need to rely significantly on internal information technology expertise (Light *et al.*, 2001). The information technology expertise that will be required in the operation of the ERP system will necessitate only a single skill set from the information technology department and therefore, potentially require fewer employees in the management of the system. For the broadcaster who is financially comfortable with outsourcing, and does not wish to invest in the development of internal information technology expertise, and does not mind the control of daily operations being in the hands of an external party (Sledgianowski *et al.*, 2008), the ERP system is a viable option.

Despite the ability to integrate functionality of every department and improve efficiency, ERP has its disadvantages too. Over emphasis has been placed on the benefits of engaging a single vendor. Should this vendor be unresponsive, inefficient, or financially unstable, the broadcaster could be left with an ERP system that no longer has optimal utility (Dempsey

and Griffin, 2007). By placing the functionality of all operations in the control of a single application and a single vendor, the broadcaster faces the risk of wasted resource and turning the clock backwards. Furthermore, ERP is not easily modifiable and could pose challenges during innovative product launches and new acquisitions that are not compatible (Chester, 2006).

The benefits of an enterprise system (ES) then is the adaptation of 'best-practices work model' approach to achieve optimal functionality of the software. However, in order to adopt such an approach, broadcasters must have sufficient resources and time to review their business processes carefully.

2.2 BoB

The BoB system offers functionality through the implementation of multiple software components from different vendors. Each of these applications is developed by a specialist inventor or manufacturer who generally focuses on one business problem/solution. Thus BoB systems provide rich functionality from the sum total of multiple components integrated for the unique purpose of the business process (Chester, 2006).

The main advantage of the BoB system is its flexibility to choose a collection of software applications that may each individually suit a specific need of the broadcaster (Light *et al.*, 2001). The BoB system does not demand the employees of an organisation to change their business processes and roles, instead the software will be fine-tuned to meet their tasks.

For an effective implementation of the BoB system, there must be an information technology infrastructure in place. Without an existing hardware, software, and internal information technology expertise, implementation of a BoB system would be expensive as the infrastructure would need to be developed (Sledgianowski *et al.*, 2008). The main disadvantage of this system is that the organisation needs to maintain interconnectivity of a variety of applications and this requires a different skills set and knowledge (Light *et al.*, 2001). Hence, usage of BoB could increase cost in the long term from staffing, training and renewal of multiple software licensing (Chester, 2006).

One other factor that must be considered is the potential complication arising from multiple vendors at creating a unified workflow. In implementing a BoB system, the broadcaster is required to work with and facilitate cooperation between different vendors. BoB systems necessitate the development of relationships with multiple parties, and require BoB vendors to work together to create interconnectivity (Dempsey and Griffin, 2007). While the cost of working with multiple vendors can be significantly high, the broadcaster does mitigate risk in the event when a single vendor fails or one component malfunctions. It is cost effective to quickly replace a part rather than the whole in a BoB system. The disappearance of one vendor is not likely to cripple the entire system (Light *et al.*, 2001).

2.3 Integrated Workflow in Broadcasting

Over the years, the evolution of the IT environment within the broadcasting industry has not been able to keep pace with the changes in the service portfolio and delivery infrastructure. Broadcast equipment know-how is specialised and scarce, and interfacing such equipment with IT applications is often complicated. Due to security and reliability

concerns, broadcasters have also not been too comfortable collaborating with large IT vendors to run mission critical elements in the broadcast chain. However, as new opportunities unfold, it is imperative that they realign their IT strategies to build competitive advantages, boost efficiency and operational capacity, and enhance staff productivity for meeting increasing business demands.

Broadcasters have traditionally installed discrete systems and applications and integrated them separately. This patchwork approach of integrating new systems and applications, however, leads to multiple silos of vertically integrated systems which require manual intervention for data accuracy and communications. The IT landscape in most broadcast environments is typically closed, heterogeneous and siloed, characterised by one major application providing most of the required functionality, supported by a set of smaller applications providing the remaining functionalities. Often this entails heavy reliance on proprietary or in-house architecture, technology and workflows with additional software being introduced to support new product lines. This leads to redundant functionality and overlapping responsibilities, while escalating costs of licenses and specialised staff make the IT landscape a very expensive one to support and maintain. There is, hence, a strong case for systems simplification and infrastructure enhancement enabling broadcasters to overcome the shortcomings of a legacy system environment. The processes involved in broadcasting are as shown in Figure 1.

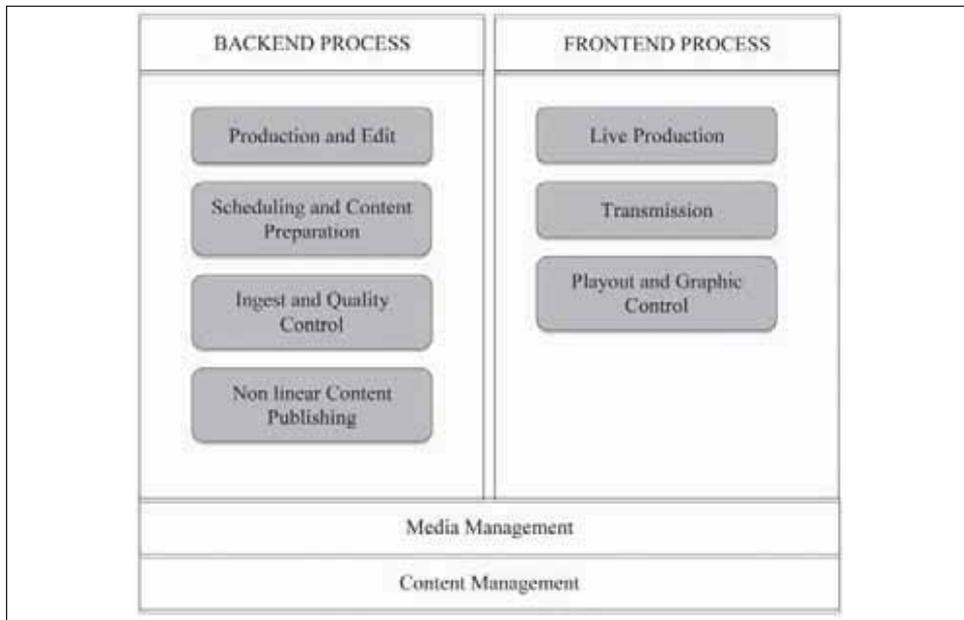


Figure 1. Broadcasting framework

Although multiple IT product suites with capabilities across these key areas exist in the market, they may not necessarily fully integrate within the existing enterprise infrastructure. This necessitates the selection and implementation of proven and mature technologies while at the same time extracting the maximum benefits from the existing investments. In order to achieve this, broadcasters should look to work with established IT vendors with the requisite broadcast domain experience and capabilities to develop and implement tailor-made solutions. Broadcasting companies need to realign their business processes and business model to address this challenge so that when faced with new content delivery methods and technology, they are equipped to react quickly and effectively.

2.4 ES Adoption Framework

The ES adoption framework justifies its adoption as appropriate and strongly influenced by three factors: Technology, Organisation and Environment (TOE) (Tornatzky and Fleischer, 1990). Since the establishment of ES, many studies have used the TOE factors as an ES Adoption Framework to evaluate the performance of business objectives as in Nah *et al.* (2001) and Lacovou *et al.* (1995). Some studies have modified the TOE framework to suit their research needs in the area of Enterprise Information system (Light *et al.*, 2001). The intention of this study is to answer the questions pertaining to the broadcasters' productivity, flexibility and cost implication of adopting the ERP or BoB for their businesses. In order to produce high-quality products or services as well as business diversification, it is essential that the choice of an ES provide competitive levels of productivity, flexibility and cost.

Hypothesis 1 [H1]: ERP and BoB implementation will result in a different level of operational productivity, flexibility and cost.

In this study, the ES selection and performance relationship were moderated by the TOE factors. The selections of these two elements are largely based on the literature review. Other elements, which may have impact on the relationship are the company policies and international exposures. However, they are not widely discussed and supported in the literature and hence are excluded in this study.

The technological factor, which is making major breakthroughs among broadcasters will ultimately, determines the labour productivity and other inputs. It is one of the three competitive forces that were introduced by Tornatzky and Fleischer (1990). Usually broadcasters will go through several levels of ICT implementation. Recent advances in technology have had a huge impact on the value chain (Stratman and Roth, 2002). ICT affects the organisation at all levels: from primary activities, including the likes of automated scheduling of talents management, flexible scheduling of news crews, automated news stories line-up, marketing and scheduling advertisement slots, support activities, automated personnel scheduling, computer-aided design and online procurement of parts and assets management. The enterprise software system allows businesses to reduce operational costs by decreasing material, procurement and transaction costs, resulting in lower prices for intermediate and finished goods, and ultimately improves their value chain (Deep *et al.*, 2008).

Hypothesis 2a [H2a]: The impact of enterprise software selection strategy on operational productivity, flexibility and cost is moderated by technological factors.

Kuan and Chau (2001) considered organisational elements such as financial readiness and human resource readiness, as perceived ones. Also, fast communication, proper structure to implement, sufficient financial resources, rich and competent knowledge and skills, and top management support are examples of organisational readiness. Organisational readiness, as a perceived measure, will have a positive impact on the attitude towards enterprise system adoption (Khaled Al-Fawaz *et al.*, 2008).

Hypothesis 2b [H2b]: The impact of enterprise software selection strategy on operational productivity, flexibility and cost is moderated by organizational factors.

Companies are willing to adopt an enterprise software system not only because of internal capability but also because of environmental factors (Ketokivi and Schroe, 2004). According to Stratman and Roth (2002), external pressure refers to influences from the organisational environment. Thus external pressure and support will have an impact on the attitude of selection. A higher level of external pressure and support will have positive impact on the attitude toward the selection of enterprise software system and its adoption (Davenport, 1998).

Hypothesis 2c [H2c]: The impact of enterprise software selection strategy on operational productivity, flexibility and cost is moderated by environmental factors.

The three hypothesis provided above provide the conceptual framework to study on the impact of enterprise software solution based on the operational, flexibility and cost and moderated by the TOE factors.

3. RESEARCH METHODOLOGY

Organisations commonly practice mixed ICT implementation strategies depending on their operating environment and the perceived benefits that the new software system will bring along with the type of implementation strategy being adopted. The literature review thus far concentrated on productivity, flexibility and ROI dimensions at product or component level when ERP or BoB system is empirically tested against those performance dimensions.

Even though it is not explicitly cited that ERP or BoB systems give rise to differences in productivity, flexibility and ROI, based on the arguments put forward, it can be generalised from the literature that ERP and BoB implementation strategy yield different levels of output in terms of productivity, flexibility and ROI. The theoretical framework for the study and conceptual model based on the factors elaborated above is shown in Figure 2.

3.1 Method

The population for this study resided at three large broadcasting conglomerates in the Klang Valley, Malaysia. They also included manufacturers and vendors from the broadcasting service industry. The population frame is drawn from about 50 departments in broadcasting organisations. The primary objective of this study is to identify which enterprise software system strategies, ERP or BoB, will yield greater levels of productivity, flexibility and ROI based on the employees' feedback. Therefore, the samples of interest in the population will be restricted to those departments that were directly involved in the integration of business

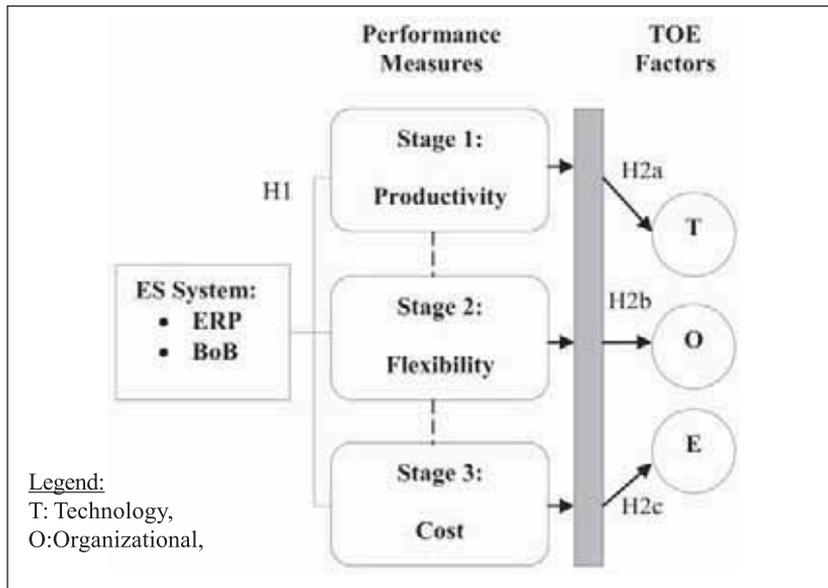


Figure 2. ES adoption framework

processes. The data on broadcasters’ productivity, flexibility and ROI were collected at departmental level. Hence, each department selected may have responded to more than one questionnaire.

The design of the questionnaire was primarily derived from the issues and questions raised in the literature. Section A consisted of five demographic questions pertaining to individual and organisational profile. Section B had six questions dealing with the same or similar departments where the organisations have implemented the ERP and the BoB system partially. Section C dealt with 13 questions, measuring three performance dimensions with ERP implementation. They were related to productivity, flexibility and ROI measures. Section D consisted of an identical set of questions as in Section C with the respondents now requested to rate the BoBs. Section E contained six questions of the TOE factors related to the identified departments. Each item was also measured on a 5-point Likert scale anchored by 1 (Strongly Disagree) and 5 (Strongly Agree).

Reliability measures of multiple statements dealing with ES productivity, flexibility and ROI as well as TOE factors were first assessed using Cronbach’s alpha. The reliability coefficient obtained ranged from 0.78 to 0.92 indicating acceptable reliability. Data collection was accomplished by email, personal delivery and face-to-face interviews.

3.1.1 Respondent and Organisation Profiles

A total of 150 questionnaires were sent out to three organisations but only 121 were collected from the respondents in this survey. Tables 1 and 2 describe respondent sample distribution.

Table 1. Profiles of the respondents and organisations

Profile	Description	No. of respondents	%
Designation	Manager	25	55
	Executive	30	45
No. of emp.	Less than 50	45	37
	50 - 100	30	50
	More than 100	20	13

Table 2. Departments and Enterprise software profiles

Profile	Description	No. of respondents	%
Production	TV Production	49	25
Engineering	Broadcasting Operations Engineering	45	32
Procurement	Support Service	23	19
Program Coordination	PR	19	12
Top Management Services	Directorate	14	11

Table 3. Description of the composite variables

Variable	Mean	Standard Deviation	Variance
<i>ERP</i>			
Productivity	4.56	0.96	0.92
Flexibility	4.20	1.03	1.06
ROI	3.97	0.91	0.83
<i>BoB</i>			
Productivity	4.17	0.93	0.85
Flexibility	3.64	0.89	0.75
ROI	4.01	0.92	1.02
<i>Business Environment</i>			
Technological	2.83	1.41	2.00
Organizational	4.39	0.87	0.76
Environmental	4.25	0.85	0.75

Table 2 describes respondents' departments. Most of the respondents were from five departments of the broadcasting organisations.

4. DATA ANALYSIS AND FINDINGS

4.1 Descriptive Analysis

It can be seen in Table 3 that the mean of technological influence is rather low (below the average of 2.83) on a six-point scale, indicating that the current ICT infrastructure in the

organisation play a limited role in the selection of enterprise software system. The mean for ERP’s ROI and BoB’s flexibility are about average (Table 3). The rather high mean of ERP and BoB’s productivity indicates both the software systems have an efficient productivity rate in the departments. Additionally, a high mean of ERP’s flexibility implies that an ERP system increases the flexibility in business processes compared to lack of flexibility as cited in the literature review (Garmus, and Herron, 2001). Finally, the mean of 4.39 for organisational factor indicates that selection of enterprise software generally depends on top management support and organisational readiness in adopting an enterprise system. Subsequently, the ERP’s ROI has been found to have the lowest mean indicating that the respondents have difficulty in meeting the ROI for ERP implementation compared to BoB. The standard deviation for all variables is small, indicating that most respondents are very close to the mean of all variables as shown in Table 3.

4.2 Impact of ERP and BoB system on Productivity, Flexibility and Cost

Each respondent was requested to rate the ERP and BoB for the same or similar departments, from the responding organisation that had implemented partial ERP and partial BoB related systems. The performance measures were with respect to productivity, flexibility and ROI. The parameter of interest is whether organisations that use ERP or BoB will result in different levels of ES productivity, flexibility and ROI. The performance measured was the difference between the performance of ERP and BoB among the broadcasters. Table 4 summarises the paired sample t-test for the differences in system performances from the two enterprise software system. On all measures of performance, the ERP system appears to have outperformed BoB except for the ROI dimension.

4.3 Impact of ES Selection Strategy through Moderating Factors

To test hypotheses 2a, 2b and 2c, the differences in performance of ERP and BoB were regressed against the moderators, technology, organisation and environment (TOE) and the results tabulated in Table 5. In terms of flexibility, all the moderators were not able to

Table 4. Summary of the paired samples T-Test

Attributes	Difference in productivity		Difference in flexibility		Difference in ROI	
	Beta	Sig. T	Beta	Sig. T	Beta	Sig. T
Tech.	0.185	0.094	0.269	0.831	0.103	0.311
Org.	- 0.003	0.000	- 0.127	0.104	- 0.692	0.000
Env.	- 0.004	0.091	0.190	0.799	- 0.103	0.342
R ²	0.114		0.104		0.610	
Sig. F	0.000		0.246		0.000	

Table 5. Summary of the regression analysis amongst the variables

Performance dimension	Mean rating		p-value
	ERP	BoB	
Productivity	4.5634	4.1683	0.000
Flexibility	4.1998	3.6402	0.003
ROI	3.9682	4.0092	0.001

*p-value < 0.01

explain the variations in the differences in performance. However differences in productivity and ROI performance can be explained (approximately 60% of the variance) by the moderator variables. In particular it has been found that differences in ES software productivity and ROI is negatively correlated to the organisational and environmental factors. This implies that the greater the influence of organisational and environmental factors, the greater the differences in productivity and ROI between ERP and BoB system implementation. Hence, Hypothesis 2b and 2c are supported.

From the results of the paired-samples t-test, it can be concluded that ERP implementation resulted in better productivity and flexibility. This seems to be inconsistent with other studies which explain that ERP has failed in terms of flexibility towards the changes in operations. While the performance dimensions are different, the increase in market performance has been quoted by Hendricks *et al.*(2007), citing that when an organisation implements an ERP system, it will provide the organisation with potential single vendor advantages, assurance in quality through efficient and productive business process and delivery. Contrary to Nah *et al.* (2001), the technological factor is not a significant moderating variable, between the relationship of ERP and BoB selection strategy. The differences in ERP and BoBs' ROI and productivity are influenced by the organisational and environmental factors. The greater the organisational and environmental influence, the larger will be the difference in productivity and ROI between ERP and BoB systems.

5. CONCLUSIONS

Generally, the findings of this study are consistent with the literature, with ERP resulting in better productivity and flexibility as opposed to BoB. The literature does state that BoB is much more flexible compared to ERP. However, possible reasons for ERP being more flexible in this study could be due to the new generations of ERP systems such as SAP and Oracle being introduced by vendors, which are more customisable and flexible. It should also be noted that all broadcasters in this study were having difficulties meeting their ROI expectations. The organisations may not be aware that ROI comes from the process improvements supported by ERP and hence if their business processes continue to be the same as in the pre-ERP days, it will fail. Broadcasters could have implemented inconsistent ROI expectations based on the wrong performance metrics. Hence, organisations need to review their business process to suit the ERP model to achieve a comfortable ROI. This study also found that the difference in ERP and BoBs' ROI and productivity is influenced by organisational and environmental factors.

A strong top management support, project team competence, interdepartmental communication, global business exposure and pressure from competitors affect the differences in ERP and BoBs' productivity and ROI. It is likely that if the organisations have the capacity, expertise and resources in excess and available for investment, they will opt for an ERP system.

As with any study, there were limitations to this study. The study used the key respondent approach to capture the relevant information. The responses could differ if a wider sample group was used. A cross-validation with different groups of respondents would have increased the robustness and confidence of the empirical results as was with Ketokivi and Schroe (2004).

The findings in this study have both theoretical and practical implications. In a theoretical context, this study extends a conceptual framework to analyse the selection and implementation criteria of ERP and BoB systems in a broadcasting environment. In the practical sense, the findings have highlighted that successful ERP implementation among broadcasters require diligent management of their organisation and environmental factors, followed by a careful analysis of the impact on business risk using ERP and BoB systems. Hence, broadcasters' decision to acquire an ES system is likely to be tipped by the health of the organisation and their complex business environment.

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