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The Determinants of Human Resource Information System Success in Japanese Manufacturing Companies*

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Abstract

Purpose - The study sought to examine the relationship between individual characteristics and system features and Human Resource Information System (HRIS) success in Japanese manufacturing companies in Malaysia.

Research Design, Data, and Methodology – This study adopt quantitative approach to investigate the relationship between individual characteristics and system features and HRIS. Toward this objective, a total of 700 questionnaires were mailed to a representative of the organization. A total of 187 questionnaires were returned, and only 145 were usable for further analysis, representing a response rate of 20.71%.

Result - Results indicated that individual characteristics and two dimensions of system characteristics (ease of use and training) were significantly related to HRIS success. Unexpectedly, the results showed that the third dimension of system features (documentation) was unrelated to HRIS success.

Conclusions - The results partially support the underlying arguments that individual characteristics and system characteristics have significant influences on HRIS success. The finding suggests that HRIS success in the organization can be generated as a result of good implementation of system support and employees' readiness to apply HRIS in their jobs.

Keywords: Human Resource Information System (HRIS), Ease of Use, Training, Documentation, Computer Understanding.

JEL Classifications: M5, M21.

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1. Introduction

The use of information technology in public and private organizations has been increasing due to its role on sustaining organization revenue growth, profitability, performance and job satisfaction (Mithas, Ramasubbu, & Sambamurthy, 2011). As a result, many organizations are investing more than 4.2% for developing information system

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applications in their organization particularly to improve business operation and maintaining business competitiveness and sustainability (Weill, Subramanai, & Broadbent, 2002). In this spectrum of information system influences on business development, the introduction of Human Resource Information System (HRIS) in the workplace is warmly welcomed.

In general, human resource information systems (HRIS) refers to a systematic procedure in collecting, storing, maintaining, retrieving, and validating data needed by an organization about its human resources activities (Broderick & Boudreau, 1992; Kovach & Cathcart, 1999; Tannenbaum, 1990). Specifically, it serves as a computerised technology, which stores, records, links, analyses and presents data about the human resources within the business (Ball, 2001). An effective HRIS provides information on just about anything the company needs to track and analyze about employees, former employees, and applicants. In addition, with an appropriate HRIS, it will enable employees to do their own benefits updates and address changes, thus freeing HR staff for more strategic functions. According to Davis and Songer (2009), the implementation of HRIS provides an opportunity for business to improve their efficiency, and business performance. Even though a great deal of attention has been given to the study of HRIS success, only limited studies on this area has been studied in the Malaysia (Jurizan, 2002; Mohamed et al., 1998; Norazuwa et al., 2000). Whilst empirical evidence on HRIS success abounds, limited number of research focused on the relationship between individual characteristics, and system characteristics (ease of use, training and documentation), and HRIS success particularly in Japanese manufacturing companies in Malaysia. Such neglect is unfortunate as differential effects of the influencing factors to successful HRIS implementation could not be determined and managed by HRIS management team in the organization. When this happens, appropriate measures by organizations to ensure user satisfaction with the system are limited. Hence, based on this gap, the present study aims to investigate the influence of these factors on HRIS success.

2. Literature Review

2.1. Human Resource Information System (HRIS)

The success of HRIS has been widely accepted when it is measured against user satisfaction (DeLone & McLean, 1992; Foong, 1999; Haines & Petit, 1997; Hosnavi & Ramezan, 2010; Ives & Olson, 1984). According to Seddon and Kiew (1994), user satisfaction reflects the net feeling of pleasure or displeasure that results from aggregating all the benefits that a person hopes to receive from interaction with the information system. Further, user satisfaction is also

known as an affective attitude towards a specific computer application by someone who interacts with the application directly (Doll & Ahmed, 1985). One of the predominant issues investigated is the effectiveness of HRIS in organizations specifically in contributing to HRM effectiveness. For example, Sanayei and Mirzaei (2008) examined the effect of EHRM tools on job satisfaction, professional commitment, organizational commitment, workforce stress, and organizational cohesiveness as output of HRM application in Iranian organizations. Surprisingly, the study found that EHRM tools were rarely used. According to the experts' judgment, a positive effect on the HRM output can be reaped if they use EHRM tools in supporting their tasks. Bondarouk and Ruel (2008) conducted three explorative case studies in the Netherlands to investigate the software implementation of HRM on three HRM domains: ensuring that employees are able to operate the new IT, providing opportunities to work with a new IT, and removing obstacles to its use. Based on findings from 83 interviews, they reported 17 HRM practices, such as regular evaluation of the use of IT, task-oriented training, and work planning with IT should be included in the agenda of IT projects. These practices are important if they are to achieve appropriate and committed use of HRM systems by the targeted employees. A review of the literature also shows that more studies in HRIS have highlighted the issue of satisfaction with HRIS applications. For instance, Gupta and Saxena's (2010) found six main factors that influenced employees' satisfaction with Electronic Human Resource Management (EHRM) such as faster communication, improvements, benefits, employee management, time efficiency and client orientation. This finding shows that an individual capability to maximize potential benefits of EHRM is not only rely on HRIS applications, but its supporting facilities have plays significant impact on employees' satisfaction.

2.2. The Relationship Between Individual Characteristics and HRIS

Individual characteristics refer to employee understanding towards the application of HRIS software and system. The findings from the literature shows that employee with a better understanding of computer are expected to be more satisfied to with the HRIS system (Haines & Petit, 1997). In addition, experienced employees were shown to select information more selectively in practicing HRIS in the organization, which in turn, will influence their satisfaction towards HRIS application (Davis & Songer, 2009; Haines & Petit, 1997). Based on the above discussion, the following hypothesis is proposed:

<H 1> Computer understanding has positive relationship with HRIS success.

2.3. The Relationship Between System Characteristics and HRIS

In the present study, system characteristics refer to the main characteristics of HRIS system. First system characteristics is ease of use. Ease of use refers to the degree to which an individual believes that using a particular system would be free of effort (Davis, 1989). The original TAM model (Davis, 1989) and Wixom and Todd Model (2005) considers ease of use as a key factor in influencing IS usage and success. Previous studies also found a strong impact of ease of use on the adoption of electronic human resource management (e-HRM) (Mohamad & Ramayah, 2011; Mohd, Ramayah, & Ibrahim, 2010). In other words, HRIS which incorporates ease of use feature would be able to satisfy users as such feature would reduce confusion and frustration, costs, and increase employee morale and effort. Hence, users experience with the application would be more enjoyable and less frustrating. In view of the above, the following hypothesis is put forward:

<H 2> Ease of use has positive relationship with HRIS success.

Second component of HRIS feature is training. Training refers to the education or on-the-job training in order to familiarise with the operation of IS (Raymond, 1988). Previous studies revealed that user training such as in-house training and self-training significantly related to user satisfaction towards HRIS (Fuerst & Cheney, 1982; Haines & Petit, 1997). In other words, training should be considered by practitioners who wish to make information technology a major source of competitiveness within the human resources function. What is more interesting, a study conducted by Foong (1999) also found that, the current low participation in training courses conducted by the Malaysian Human Development Corporation indicates an apparent lack of interest among Malaysian SMEs in IT training, and as a consequence the adoption of IT among Malaysian SMEs is slow. This will also lead to dissatisfaction among users with the system. Accordingly, the third hypothesis is proposed as follows:

<H 3> Training has positive relationship with HRIS success.

The final component of HRIS characteristics is documentation. Documentation refers to the written documents to improve user understanding of the system and used as an educational as well as a training tool (Doll & Ahmed, 1985). User documentation plays an important role in implementation success of an information system through its user satisfaction. In fact, user managers with well documented systems found them easier to use, reported greater trust in their information, felt that the systems met

their needs, and considered them to be more enjoyable to use. Managers with good user documentation also considered the system less troublesome and less difficult to operate. With good user documentation, the user managers were less likely to want the systems modified or redesigned and were satisfied because they received up-to-date reports from the systems when they wanted them. Indeed, user satisfaction of a system was strongly influenced by its documentation (Gemoets & Mahmood, 1990; Doll & Ahmed, 1985). Hence, the following hypothesis is proposed:

<H 4> Documentation has positive relationship with HRIS success.

3. Method

3.1. Population and Sampling Technique

The study population includes all employees in the Human Resources Department in Japanese manufacturing companies in Malaysia. A random sampling method was used to select the sample for this study. A total of 700 questionnaires were mailed to a representative of the organization who agreed to participate in this study. The representative will then distribute the questionnaires to their employees. Each participant received one set of questionnaire with cover letter attached, explaining the purpose of the study and the instructions on how to answer the questionnaire. Participants were also provided with a pre-addressed and postage-paid envelope so that they could post the questionnaire back to the researcher. A total of 187 questionnaires were returned, and only 145 were usable for further analysis, representing a response rate of 20.71%.

3.2. Measurement

HRIS success - HRIS success was measured by eight items adapted from the instrument developed by Bailey and Pearson (1983). Participants were asked to indicate their degree of agreement or disagreement on statements pertaining to their understanding of HRIS, relevancy of output information, accuracy of output information, precision of output information, communication with the HRIS/MIS staff, time required for new system/modules development, completeness of the output information, and overall satisfaction. Items were measured on a five-point Likert scale, ranging from '1' "strongly disagree" to '5' "strongly agree." Either in an original or a modified version, the instrument has been widely employed by previous studies (e.g. Haines & Petit, 1997; Hosnavi & Ramezan, 2010; Ives & Olson, 1984). The modified version of the scale proved to be reliable in our study ($\alpha = .771$) and factor analysis confirmed the structure found in previous studies.

System characteristics - With regard to system characteristics, three dimensions of this construct (ease of use, training and documentation) were measured by ten items adapted from Haines and Petit (1997). All items were measured on a five-point Likert scale ranging from '1' "strongly disagree" to '5' "strongly agree". Participants were asked to indicate their level of agreement (or disagreement) on items such as "The applications are easy to use," "The applications are easy to understand," and "Availability of general management to support users to access multiple types of information." The instrument has also been used by previous studies (Haines & Petit, 1997; Davis, 1989). We found that ease of use, training and documentation reported reliabilities of .783 and .857, respectively.

Individual characteristics - With regard to individual characteristics, single dimension of this construct (computer understanding) was measured by three items adapted from Haines and Petit (1997). All items were measured on a five-point Likert scale ranging from '1' "strongly disagree" to '5' "strongly agree". Participants were asked to indicate their level of agreement (or disagreement) on items such as "I do understand the HRIS software products very well". The modified version of the scale proved to be reliable in our study ($\alpha = .761$) and factor analysis confirmed the structure found in previous studies.

4. Results and Discussion

4.1. Profile of Respondents

Out of 145 participants, 43.9% were males. 56.1% were unmarried and 66.4% hold a bachelor degree. HR planning officer constitute 19.7% of the survey participants, followed by 18.5% career development and 16.3% Payroll/Salary officer. The average age of participants was 31 years old. On average, the participants had been in their present position for 3.99 years, and had served their organization for 3.21 years.

4.2. Factor Analysis

A factor analysis with principle component analysis employing an orthogonal varimax rotation was carried out to ascertain the validity of the measures of both factors and user satisfaction. The criteria recommended by Igbaria, livari, and Maragahh (1995) to identify and interpret factors were used, in that each item should load .50 or greater on one factor and .35 or lower on the other factor.

4.2.1. Factor Analysis on HRIS

Factor analysis with varimax rotation was also run to validate whether the dimensionality of HRIS success. As shown in Table 1, the factor analysis yielded a single factor solution explaining 55.645% variance with extracted factors eigenvalue of more than 1. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .879 whereas the Bartlett's test of sphericity was significant ($\chi^2=533.205$, $p<.01$), indicating sufficient inter-correlations for the factor analysis. The result confirms that the item used to measure HRIS success loaded on a single factor.

<Table 1> Rotated factor loadings of HRIS

HRIS success items	Factor Loading
	1
1. User understanding of the HRIS.	.715
2. Relevancy of output information.	.808
3. Accuracy of output information.	.791
4. Precision of output information.	.639
5. Communication with the HRIS staff.	.669
6. Time required for new systems/ modules development.	.824
7. Completeness of the output information: The comprehensiveness of the information content.	.733
8. Overall satisfaction with HRIS.	.769
Percentage of variance explained (%)	55.645
Kaiser-Meyer-Olkin	.879
Bartlett's test of sphericity approx. chi square	533.205
Df	28
Significance level	.000

4.2.2. Factor Analysis on System Characteristics

With respect to factors examining the system characteristics, the factor analysis yielded a three factor solution explaining 69.995% variance, as shown in Table 2. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .789 whereas the Bartlett's test of sphericity was significant ($\chi^2=523.679$, $p<.01$), indicating sufficient inter-correlations for the factor analysis. The easeofuse explained 27.392%, training explained 24.021%, and documentation explained 19.582%.

<Table 2> Factor analyses on system features

System Characteristics	Components		
	1	2	3
Factor 1: Ease of Use			
1. The applications are easy to use.	.916	-.084	-.076
2. The applications are easy to understand.	.902	-.064	.134
3. The user documentation is well written.	.633	.120	.232
4. The user documentation describes, step by step, how to use the software.	.634	-.076	.112
Factor 2: Training			
1. Training you had received from vendor to use HRIS applications.	-.077	.770	-.098
2. Training you had received from college course to use HRIS applications.	-.049	.754	.211
3. Training you had received from in-house training to use HRIS applications	-.239	.791	.246
4. Training you had received from self-training to use HRIS applications			
Factor 3: Documentation			
The user documentation of HRIS is complete.	-.145	.162	.866
The user documentation of HRIS is well written.	-.165	.215	.786
The user documentation of HRIS describes how to use the software.	-.292	.312	.721
Eigenvalue	2.797	1.866	2.754
Percentage of variance explained = 69.995%	27.392	24.021	19.582
Kaiser-Meyer-Olkin = .789			
Bartlett's test of sphericity approx. chi square = 523.679; df = 21; Sig = .000			

4.2.3. Factor Analysis on Individual Characteristics

Finally, with respect to factors examining the individual characteristics (computer understanding), the factor analysis yielded single factor solution explaining 48.245% variance, as shown in Table 3. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .776 whereas the Bartlett's test of sphericity was significant ($\chi^2=532.215$, $p<.01$), indicating sufficient inter-correlations for the factor analysis.

<Table 3> Factor analyses on computer understanding

Computer understanding items	Factor Loading
	1
1. I understand the HRIS software products very well.	.775
2. I do understand the computer / HRIS hardware very well.	.708
3. I do understand the HRIS programming very well.	.691
Percentage of variance explained (%)	48.245
Kaiser-Meyer-Olkin	.776
Bartlett's test of sphericity approx. chi square	532.215
Df	24
Significance level	.000

4.3. Multiple Regression Result

Multiple regression analysis was used to determine the

direct relationship between individual characteristics, system features and HRIS success. This analysis technique could also be used to determine what proportion of the variance in the dependent variable is explained by the independent variables when these variables are entered into the regression analysis (Hair Jr. et al., 2007). As shown in Table 4, individual characteristics (computer understanding) and two dimensions of system features (ease of use and training) managed to explain significantly 26.7% of the variance in HRIS success. Specifically, computer understanding ($\beta = .433$, $p < .01$), and both system features, ease of use ($\beta = .321$, $p < .01$), and training ($\beta = .243$, $p < .01$) were found significantly related to HRIS success. Overall, the results of the analysis provide clear support for H1, H2, and H3.

<Table 4> Multiple regression results

Predictors	Dependent variable (HRIS success) Std. β
Computer understanding	.433**
Ease of use	.321**
Training	.243*
Documentation	.122
R ²	28.2
Adj. R ²	26.7
R ² change	25.2
F change	325.32**

Note. ** $p < .01$, * $p < .05$

4.4. Discussion

The results partially support the underlying arguments that individual characteristics and system features have significant influences on HRIS success. In general, the finding suggests that HRIS success in the organization can be generated as a result of good HRIS characteristics and employees understanding. As expected, the present study found that ease of use and training are positively related to HRIS success. Ease of use gives additional contribution to our understanding on HRIS success because this factor can improve HRIS quality services. Ease of use also geared the users' ability to use the system effectively in performing their tasks, such as making decision, planning work and servicing customers.

This study also found that HRIS training is important factor in enhancing HRIS success. Technology based training is recommended particularly to improve employees' capability, skills and knowledge in dealing with new HRIS features and applications. Therefore, systematic training design must be designed and developed properly. HRIS training program must has comprehensive modules because training quality is a significant predictor of HRIS satisfaction and system quality. The relationship between computer understanding and HRIS success may be more practical in a situation where employees are competent enough to implement and practice HRIS in their workplace. In this context, employees' readiness to learn new skills and knowledge in HRIS is important to be addressed. Employees' readiness for any changes in HRIS features must be continuously monitored because readiness to change can reduce the failure rate of HRIS implementation. This approach will be able to enrich HRIS understanding among employees, and it will give positive sign to HRIS success in organization.

The current research findings have several implications for both theoretical and practice. From the theoretical perspective, the present study has contributed new information to the body of literature especially one that related to HRIS success. The results have provided with empirical evidence on the direct influence of computer understanding, ease of use, and training on HRIS success, and further support the underlying premise of HRIS theory such as Technology Acceptance Model (TAM). TAM assumes that employees' beliefs about computer understanding, ease of use, and training are important in HRIS adoption in organizations. The findings of the present study also have practical implications. The results of the present study

suggest that managers need to consider computer understanding, ease of use and training to make sure that HRIS is implemented successfully. More specifically, users are likely to feel enthusiastic in using a system that is easy to use, and the same time employers are willing to provide proper training programme and conducive HRIS facilities. In other words, to make sure HRIS is implemented successfully, managers should not abuse the accessibility and efficiency of the system to the extent that users of the system will be dissatisfied.

4.5. Research Limitations and Future Research

Despite the above implications, the present study is not without its limitations. First, this study investigated only on individual characteristics and system support, other factors may need to be examined. For example, researchers have to consider the effect of other factors such as organization support, leadership and job characteristics on HRIS success. This is because, in this study, all significant variables only showed 34% of the variance in HRIS success, indicating that there are other factors that could influence user satisfaction and hence HRIS success. Second, further research should also widen the measurement of HRIS system success by considering other dimensions such as individual job performance and other behavioural work outcomes. By doing so, the extent of HRIS success can be broadly ascertained and identified. Finally, even though the present study has shed some light into what influences HRIS successful implementation, the study's findings may not be generalizable to other organizations or research settings whose culture and employee makeup may be different. Hence, studies may consider various contexts to be able to draw a more conclusive finding.

5. Conclusion

The results showed that individual characteristics and system characteristics (ease of use and training) were significantly related to HRIS success. Since all these factors are related with HRIS success, management of organization should focus more on improving the management of HRIS practices by focusing on employees' computer understanding, and improving system characteristics in the organization.

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