# A Moderating Effect of Task-Technology Fit model toward Enterprise Information Portal (EIP) in Taiwan

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**Abstract.** Along with internationalization and global competitor emergence, enterprises try to figure out how keep competitive ability and grants full development. Thus, the information technology was adopted to be one of the tools to sustain the competitive advantage. It could be allocated all resources including internet, intranet and www site to combine in one integrated Web-based interface. This Web site could share information and cooperate tightly with the related suppliers, distributors, customers and employees…etc. This study aims to analyze the user satisfaction for Enterprise Information Portal (EIP). Research model was based on DeLone and McLean updated model of information systems success and jointed the "Task-Technology Fit" dimension. Data were obtained from the employees of objected company in Taiwan, and 542 effective responses were retained for analysis. Statistic analysis was used to estimate the fit of the overall model and to analyze the relationship between variables.

**Keywords**：Enterprise Information Portal(EIP), System Quality, Service Quality, Task-Technology Fit, Service Satisfaction

## 1. INTRODUCTION

Construction of a corporation internal portal, representing the index of this enterprise "Information ability", It must go with flow to build an enterprise portal with a solid information infrastructure. The main user of enterprise portal is internal staff, thus the first-line employees should have the deepest experience about the design of portal web, website content, and integration between different individual systems.

In order to understand the status of accessing the enterprise portal website by employees, this study only includes staffs with permission to sign in portal website as study samples.

## 2. Literature review

### 2.1 Information system success model

DeLone and McLean (1992) presented information success model (Figure 2-1), use six dimensions to measure the success of information systems, namely System Quality, Information Quality, system usage degree, User satisfaction, Individual Impact, and Organizational Impact.

The theoretical model posits that the system quality and information quality can affect the usage and user satisfaction of the information system; and the system usage degree owns interaction with the user satisfaction, thereby affecting personal behavior, and then personal behavior impacts on organizational performance.

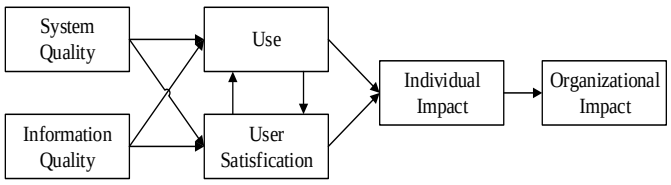
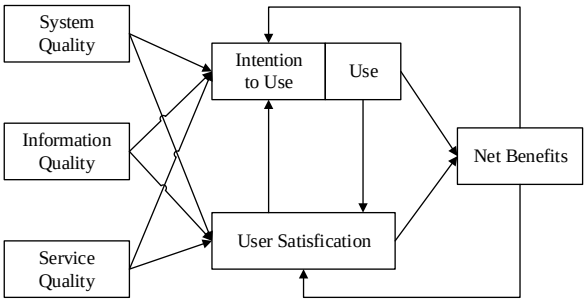



Figure 2-1 Information System Success Model

After the D & M information systems success model published, it attracted high attention in information technology field and had a lot of citation and verification in studies. Of course, this model was questioned and challenged by other scholars, Pitt, Watson & Kavan (1995), observed information systems are generally used to measure performance indicators, focusing solely on the product aspect of the information system, rather than the part of service on information functions, which would lead to the biased consequences of information performance. In other words, users do not only have the requirement of hardware devices, but also a greater need for information services. In a word, the original systems success model did not take into account the services role of information sector, thus it should be increased the variable of "quality service".

In response to the applicability of the model of e-commerce and respond to the relevant research discussion and criticism for the original model, DeLone and McLean proposed the revised information system success model (Figure 2-2) in 2003, assessing its usefulness based on the change and practicability of information systems. The modified D&M information system success model retained the system quality, information quality, user satisfaction, and usage four dimensions based on its original structure, and added another service quality facet. On the other hand, it integrated “usage” and "willingness to use" as one facet for




considering the applicability in different conditions and combined two facets of individual impact and organizational impact as simplified net benefits.

Figure 2-2 Updated Information System Success Model

### 2.2 Information Quality

Information Quality: means the assessment for IT system output, DeLone and McLean (1992) suggested that the information quality is a measurement of the output of system quality, which contains the output data accuracy, completeness, timeliness, relevance, understandability, usefulness, reliability, the latest, objectivity and conciseness, and so on.

We summarized various scholars’ measures on information quality dimensions shown as Table 2-1.

Table 2-1 The Variables List of Information Quality

| Publications | Variables |
|---|---|
| DeLone & McLean(1992) | Importance, Relevance, Usefulness, Informativeness, Usableness, Understandability, Readability, Clarity, Format, Appearance, Content, Accuracy, Precision, Conciseness, Sufficiency, Completeness, Reliability, Currency, Timeliness, Uniqueness, |

| Publications | Variables |
|---|---|
| | Comparability, Quantitativeness, Freedom from bias |
| DeLone & McLean (2003) | Completeness, Ease of Understanding, Personalization, Relevance, Security |
| Webb & Webb (2004) | Completeness, Accuracy, Format, Currency |
| Wang (2008) | Content, Accuracy, Format |
| Xu, Benbasat & Cenfetelli (2013) | Completeness, Accuracy, Format, Currency |

## 2.3 System Quality

System quality means the assessment of the information system itself, which is the assessment of the success of technical aspects (DeLone & McLean, 1992), including ease of use, easy to learn, reactivity, reliability, integrity, accuracy, efficiency, response time, the adjust system response time, ease of access… and so on.

Table 2-2 is measure dimensions and empirical objects which DeLone and McLean (1992) aggregated different propositions of quality system.

Table 2-2 The Variables List of System Quality

| Publications | Variables |
|---|---|
| Bailey & Pearson (1983) | (1) Convenience Of Access<br>(2) Flexibility Of System<br>(3) Integration Of Systems<br>(4) Response Time |
| Barti & Huff (l985) | Realization Of User Expectations |
| Belardo. Kanvan. & Wallace (1982) | (1) Reliability<br>(2) Response Time<br>(3) Ease Of Use<br>(4) Ease Of Learning |
| Mahmood (1987) | Flexibility Of System |
| Morey(1982) | Stored Record Error Rate |
| Srinivasan (1985) | (1) Response Time<br>(2) System Reliability<br>(3) System Accessibility |

DeLone and McLean (1992)

## 2.4 Service Quality

DeLone and McLean (2003) proposed the service quality is an overall support provided by the service provider, regardless of whether this support comes from the information systems department or a new organizational unit or outsourcing network service providers are all applicable. With market mechanisms, poor service support would be eliminated; DeLone and McLean (2003) used the facets of assurance, empathy and responsiveness to measure service quality service.

We aggregated various scholars' measure on service quality dimensions shown as Table 2-3.

Table 2-3 The Variables List of Service Quality

| Publications | Variables |
|---|---|
| Parasuraman, Zeithaml & Berry (1988) | Tangible, Responsiveness, Assurance, Empathy, Reliability |
| Liu & Arnett (2000) | Responsiveness, Empathy, Assurance, |
| Zhang et al. (2001) | Tangible, Assurance |
| DeLone & McLean (2003) | Assurance, Empathy, Responsiveness |
| Xu, Benbasat & Cenfetelli (2013) | Tangible, Responsiveness, Assurance, Empathy, Service Reliability |

## 2.5 User Satisfaction

DeLone and McLean (2003) suggested that the user satisfaction is the most effective facet to measure the success of information system. However, when a user satisfaction survey carried out, whether the object selection or assessment tools and methods, may vary due to the different subjects of empirical set by scholars; in the study of Lucas (1981), took the sales representative for an object; The study of King and Epstein (1983) saw the manager as an object. About the assessment method, Baitey and Pearson (1983) used 39 items to measure user satisfaction; Raymond (1985) captured 13 items from Pearson questionnaires to measure the satisfaction of Management Information System from managers; Jenkins, Naumann & Wetherbe (1984) used 25 items to assess the satisfaction of the system from system manager.

Table 2-4 is the measure dimensions and empirical objects of user satisfaction proposed by different scholars which aggregated by DeLone and McLean (1992).

Table 2-4 The Variables List of Service Satisfaction

| Publications | Variables |
|---|---|
| Alavi & Henderson (1981) | Overall Satisfaction With DSS |
| Baitey & Pearson (1983) | User Satisfaction |
| Baroudi, Olson & Ives (1986) | User Information Satisfaction |
| Barti & Huff (l985) | User Information Satisfaction |
| Bruwer (1984) | User Satisfaction |
| Cats-Baril & Huber (1987) | Satisfaction With A DSS |
| DeSanctis (1986) | Top Management Satisfaction<br>Personal Management Satisfaction |
| Doll & Ahmed (1985) | User Satisfaction |
| Edmundson & Jeffery (1984) | User Satisfaction |
| Ginzberg (1981a) | Overall Satisfaction |
| Ginzberg (l981b) | Overall Satisfaction |
| Hogue (1987) | User Satisfaction |
| Ives. Olson &Baroudi (1983) | User Satisfaction<br>Bailey & Pearson |
| Jenkins, Naumann & Wetherbe (1984) | User Satisfaction |
| King & Epstein (1983) | User Satisfaction |
| Langle, Leitheiser, & Naumann (1984) | User Satisfaction |
| Lehman, Van Wetering. & Vogel (1986) | Software Satisfaction<br>Hardware Satisfaction |
| Lucas (1981) | Enjoyment Satisfaction |
| Mahmood (1987) | Overall Satisfaction |

DeLone and McLean (1992)

## 2.6 Task-Technology Fit

Information System Success Model focused more on the technical level of information quality or the impact on user satisfaction for system quality, but not mentioned about the impact of the individual task characteristics or task properties, however, this is also an important impact factor of the information systems success. (Alavi and Joachimsthaler, 1992; Eieman et al, 1995;. Swink, 1995; Swink and Speier, 1999; Menneeke et a1, 2000.).

The main facets of Task-Technology Fit model are defined as follows: (Goodhue and Thompson, 1995; Goodhue, 1995; Goodhue, 1998), the model shown in Figure 2-3.

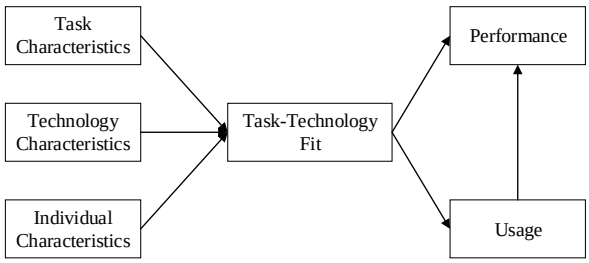



Figure 2-3 Task-Technology Fit model

Task Characteristic: refers to all activities from input to output process for personal use of information technology.

- Technology Characteristic: contains the hardware and software, data representation and user support services.
- Individual Characteristic: the role of individuals using the system.
- Task-Technology Fit: is a mutual accord of indicators, including of a measure on three antecedents of task characteristics, technology characteristics, and individual characteristics, and even the degree of affecting the Task-Technology Fit.
- Utilization: Task-Technology Fit will affect the using extent and it will further affect job performance.
- Performance Impact: its significance includes of improving efficiency and increasing the effectiveness and task quality.

There are two antecedents to affect Task-Technology Fit, task characteristics and technology characteristics are the two main factors; on the aspect of the task characteristics, Goodhue and Thompson (1995) suggested that it should be measure by Non-Routineness, interdependence, and Job titles based on enterprise diversity tasks; and on the facet of the technology characteristics, it should base on two variables related with employees of a variety of information systems and their departments to measure; in order to promote this concept, Goodhue and Thompson（1995）made the questionnaires per separated items of task, technology, user and departments

within the enterprise. The data analysis showed that: Task-Technology can be examined by eight factors of information quality, authorization, Compatibility, ease of Use, timeliness, reliability and user relationships. It emphasized that individual characteristics is one of the important antecedent to affect TTF constructs, but did not verify the influence of the construct on TTF.

## 3. Research methodology

### 3.1 Research architecture and hypothesis

This study aims at understanding the demands of the enterprise portal services for C company employees. Meanwhile, it tried to explore the impact factors to use internal portal, user satisfaction and kinds of issues for employees. The research object mainly targeted at the staff who has permission to access the internal portal website, and investigated the impact of information quality, system quality, service quality, and Task-Technology Fit on user satisfaction from user point of view.

This study adopted the revised success model of the information system by DeLone and McLean (2003), and added the Task-Technology Fit dimension proposed by Goodhue and Thompson (1995) as the research architecture as below:

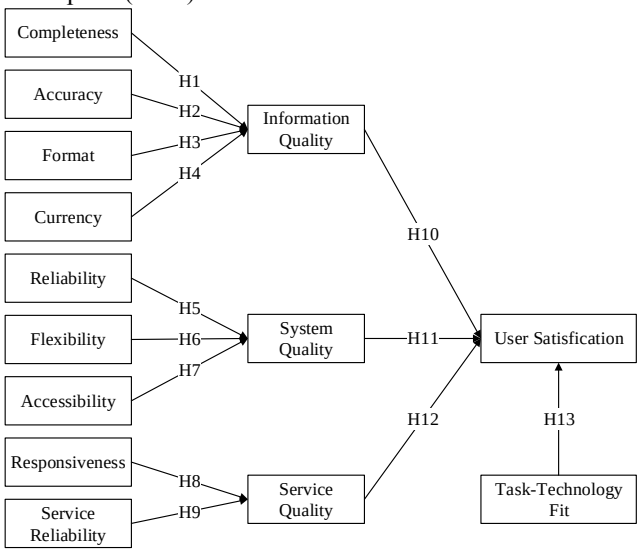



Figure 3-1 The Research Architecture

According to the above research framework to make the following assumptions:

H1: There are positive impacts on the integrity of information quality.

H2: correctness has positive impact on the quality of information.

H3: Format has a positive impact on the quality of information.

H4: Timeliness has a positive impact on the quality of information.

H5: Reliability has a positive impact on the reliability of the system quality.

H6: Flexibility of the system has a positive effect on quality.

H7: Approachable nature has a positive impact on the quality of the system.

H8: Reactivity is with positive impact on service quality.

H9: Service reliability has a positive impact on service quality.

H10: Information quality has a positive impact on user satisfaction.

H11: System quality has a positive impact on user satisfaction.

H12: Service quality has a significant positive impact on user satisfaction degrees.

H13: Task-Technology Fit has a positive impact on user satisfaction.

### 3.2 Variables

The study variables include "information quality", "system quality ", "service quality", "user satisfaction", "Task-Technology Fit" dimensions, and the question items mainly refer to the appropriate literatures of information system success model and Task-Technology Fit, then designed questionnaire topics per all measured facets. Moreover, using a five-point Likert scale assessment to score from 1 point to 5 points, depending on the level of agreement to separate as "strongly disagree", "disagree", "no opinion", “agree”, and "strongly agree" five options for each measurement facet.

### 3.3 Sampling

Since the enterprise internal portal (EIP) has become the C company's most important platform to exchange information. No matter the chairman or the most junior staff in the company will release, acquires, and process posts regardless of the size of the business or living things, almost all employees must rely on this platform to handle official business and personal affairs. Thereby, this study collected the employees with permission to sign in the C company EIP as random sampling to do empirical research for future improvement of EIP.

### 3.4 Measurement

In this study, statistical software SPSS tools Version 22 was used as questionnaire data analysis, the analysis method comprising: demographic data analysis, descriptive statistics, reliability analysis, validity (factor) analysis, correlation analysis, regression analysis and demographic variables analysis.

## 4. Data Analysis and Discussion

This study made web questionnaires, disclosed within EIP for voluntary respondents, and collected 549 copies, of which even invalid questionnaires and 542 valid ones, earned the effective rate of 98.72%.

### 4.1 Sample description

As the below analysis shows, most of this study's samples sex are male, ages concentrated in young adults, mostly the education is above university, the staff proportion mainly belongs to production department, the frequent application system focuses on individual system related with personal information or welfare, and the using frequency is less than 4 hours or so.

Table 4-1 Summary of Sample Description

| Variables | Quantity | Percentage (%) |
|---|---|---|
| **Gender** | | |
| **Male** | 537 | 99.1% |
| **Female** | 5 | 0.9% |
| **Age** | | |
| **20~29** | 59 | 10.9% |
| **30~39** | 268 | 49.4% |
| **40~49** | 60 | 11.1% |
| **50~59** | 105 | 19.4% |
| **≥ 60** | 50 | 9.2% |
| **Education** | | |
| **Senior High School** | 126 | 23.2% |
| **University** | 319 | 58.9% |
| **Master** | 95 | 17.5% |
| **Doctor** | 2 | 0.4% |
| **Department** | | |
| **Administration** | 1 | 0.2% |
| **Purchase** | 16 | 3.0% |
| **Finance** | 2 | 0.4% |
| **Research** | 31 | 5.7% |
| **Other** | 27 | 5.0% |
| **Engineering** | 137 | 25.3% |
| **Production** | 328 | 60.5% |
| **Finance** | 2 | 0.4% |
| **Research** | 31 | 5.7% |
| **Other** | 27 | 5.0% |
| **Engineering** | 137 | 25.3% |
| **Production** | 328 | 60.5% |
| **Job Title** | | |
| **Administrator** | 70 | 12.9% |
| **Profession** | 59 | 10.9% |
| **Operator** | 332 | 61.3% |
| **Processor** | 79 | 14.6% |
| **Other** | 2 | 0.4% |
| **System** | | |
| **Human Resource Information** | 420 | 24.9% |
| **Information Management System** | 230 | 13.7% |
| **Financial Management System** | 23 | 1.4% |
| **Personnel Affair System** | 430 | 25.5% |
| **Engineering Management System** | 46 | 2.7% |
| **Purchase Management System** | 38 | 2.3% |
| **Equipment Management System** | 113 | 6.7% |
| **Knowledge Management System** | 180 | 10.7% |
| **Other** | 124 | 7.4% |
| **Usage Frequency** | | |
| **< 1 Hour** | 277 | 50.0% |
| **1~4 Hours** | 211 | 38.9% |
| **> 4 Hours** | 60 | 11.1% |

### 4.2 Reliability analysis

This study shows that each facets of Cronbach's α values are 0.994, which are higher than 0.8; correlation coefficient is between 0.771 ~ 0.932, thus this research shows the overall scale has good internal consistency.

### 4.3 Validity(Factor) analysis

After analysis, the KMO value of each facets on this study are greater than 0.76 and Bartlett spherical test values are less

than 0.001, indicating that sample data is suitable for factor analysis.

## 5. Conclusion

Base on the above findings, we put forward the below managerial suggestions and implications.

Well-designed web interface will increase the willingness of employees to use, which there is web content with clear and unambiguous classification, allocating well the limited scope of the site window based on human factors engineering or browsing inertia, so that users can easily and intuitively find the required information. In addition, we believe it will strengthen the knowledge and identity of the company from staff if it could combine corporate identity system (CIS) to include the business ideas, marketing strategies and visual communication in the web design.

Many patterns of working models continue to produce, followed by a large and complex interface jobs. Thus, derived a variety of vertical and horizontal series systems and information exchange, in this situation, the system must be ready to be adjusted flexibly to match up the demand.

Business operations will generate lot of messages. How to transform messages into useful information, convey and store, which contains large amount of data information flow, cash flow and logistics, all rely on a stable and efficient system operation. Therefore, the system's architecture, building, hardware and software equipment selection, operation and maintenance strategy define and the future scalability are required to be carefully planned to ensure the future stable system operation.

The better service quality, the higher utilization of employees and immediate, accurate and correct service will capture more users' favor and affirmation to use system. This depends on the quality of information personnel services, no matter internal man-power or choose external subcontract vendors, system hardware and software operation, even the rules of business operations, and the characteristics and needs of employees, they all must be better and deeper understood, in order to solve all kinds of unexpected situations and problems.

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