# Knowledge Management & E-Learning
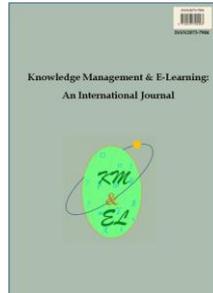
## Information system quality in work-life balance

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**Abstract:** This paper aims to look for the role information systems quality may play in work-life balance among Malaysian ICT employees. The results of this study will be useful in the development of new tools and technologies that are focused on ISQ dimensions primarily information system quality which can be helpful to devise suggestions to the ICT sector on matters pertaining to sustainable development/policy formulation with reference to achieving a good work-life balance. A total of 79 respondents' views were analyzed using Partial Least Square (PLS) to obtain the final results. The results showed that information quality and system quality has strong effect on work-life balance as compared to service quality which showed no relation to work-life balance.

**Keywords:** Information system quality; Work-life balance; Information quality; System quality; Employee wellbeing

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## 1. Introduction

Work practices have changed over time because of the globalization of commodities and the emergence of shared service outsourcing companies that provide 24/7 operations and

various services in the ICT industry. Information technology (IT) has created insightful changes in both professional and personal communications. It has changed the sense of location and time by blurring the boundaries between work and personal life. Thus, the sophisticated communication devices and applications are pervasive in the current workplace. Consequently, employees have become accustomed to this new method of working. This method allows flexibility to work from different geographical locations with the aid of state-of-the-art gadgets and communication devices. Moreover, the significant commitment to work and work demands required by such work method creates barriers to maintaining a healthy lifestyle, achieving a balanced family time, pursuing leisure activities, and engaging in travel and study.

Previous studies by researchers (Guest, 2002; Roberts, 2007; Kim, 2014) have looked at various aspects of work-life balance and factors affecting employee work-life balance in various industries and countries. However, there has been limited light shed in terms of the role of information quality in employee work-life balance. Guest (2002) argues that the progresses in technology and the call for quick responses are important issues that have to be examined. The current trend of borderless working methods indicates strong need to examine whether information system quality has any role to play in enhancing employee work-life balance.

## 2. Literature review

Long operational hours tend to take away the time that employees ought to spend with their loved ones, thereby resulting in stress and the lack of quality family time (Ammons & Markham, 2004; Cabanac & Hartley, 2013). Thus, remote working was proposed as a solution for maintaining a well-balanced life and career (Felstead, Jewson, Phizacklea, & Walters, 2003). The demand for remote working systems has increased particularly because of the large number of women entering the workforce, longer working hours, and the emergence of more complex and sophisticated technology that enables constant contact between employees and workplace demands. As a result, employees experience increased pressure to fulfill their tasks at work, as well as their social and family responsibilities (Rapoport, 1970). Several researchers (Burchell et al., 1999; Guest, 2002; Sturges & Guest, 2004; Macky & Boxall, 2007; Deery & Jago, 2009; Sylvain, 2011) have noted that several factors influence the work-life balance (WLB) of employees. These factors vary with the type of employment sector where the employees work. The progress and operation of information communication systems in recent years has affected and continues to affect all levels of society in a substantial manner.The role of information systems (IS) in facilitating remote work cannot be undermined (Shagvaliyeva & Yazdanifard, 2014). Remote working can be achieved by organizations using quality information systems (Kankanhalli, Pee, Tan, & Chhatwal, 2012). Subsequently, these technologies can improve WLB imperatives (Brown et al., 2010). The implication of IS can be understood by improving an organization's profit limitations to provide user-friendly and valuable applications. IS quality (ISQ) is referred to as the conformance to certain requirements in design systems that match the end users' information needs and adhere to business standards (Reeves & Bednar, 1994; Gorla, Somers, & Wong, 2010). Providing an appealing and user-friendly service or product and satisfying users' needs for changes and expectations toward IS quality eases their efficient work performance (Gorla, Somers, & Wong, 2010). The increased dependence of employees on IS drives management interest in improving ISQ. According to Gorla, Somers, and Wong (2010), the "improvement of IT quality" is one of the top issues facing ICT employees. Although ISQ is a multidimensional measure, the phase of IT quality that is significant to

organizations must be established to aid higher management authorities in devising efficient ISQ enhancement strategies (Gorla, Somers, & Wong, 2010). Gorla, Somers, and Wong (2010) modeled the association between ISQ and organizational impact and revealed that high levels of system quality, information quality, and service quality enhanced organizational influence. They also reported a positive relationship between system quality and information quality. A survey was used to test the data in this study. The structural equation model exhibited a good fit with the experimental data. Thus, the results of their study demonstrated that IS service quality is the most influential variable in this model, followed by information quality and system quality. Thus, IS service quality for organizational performance is crucial (Gorla, Somers, & Wong, 2010).
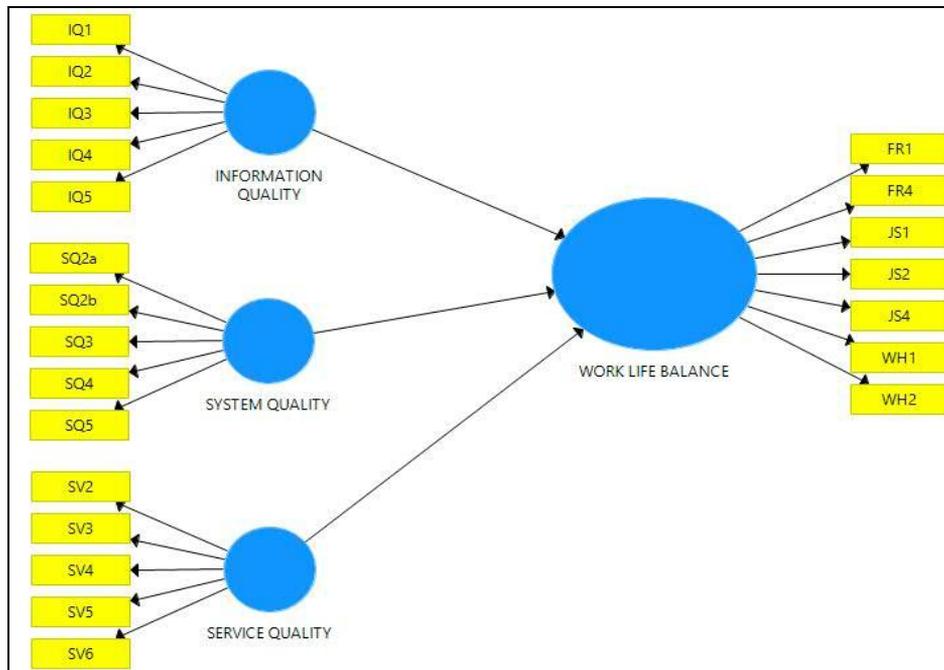


**Fig. 1.** Research model

Although many theoretical frameworks have been adapted to measure technology usage and satisfaction, relatively few have been developed to investigate the link between ISQ and its effect on WLB. Integrated solutions could help employees balance work-family life conflicts to a significant extent (Madsen, 2003). Based on the review of current and previous literature (Mahatanankoon, 2010; Barker,1993; Boswell & Olson-Buchanan, 2007), the boundary between work and life is unclear as a result of technological control. Theorists suggest that technological dependence is evident because the employees in the cloud computing industry heavily rely on gadgets and applications to perform their daily operations. Researchers developed a number of models to describe the factors that ensure "successful" IS. Davis's (1989) technology acceptance model adopted the theory of reasoned action and the theory of planned behavior (Fishbein & Ajzen, 1975) to clarify why some information systems are more willingly accepted by users than others. However, acceptance is not equivalent to success, although the acceptance of an IS is a prerequisite to determine its success. Technological advances have rendered the possibility for work to be performed from almost anywhere (Kinnunen, Mauno, Geurts, & Dikkers, 2005). Managing the integration of work and family demands

is a critical challenge facing most employees and an issue of growing importance in the management literature (Kossek, Noe, & DeMarr, 1999; Scholarios & Marks, 2004). ISQ is expected to strongly influence the effectiveness of IS, and this aspect can be defined as the degree to which IS performs its intended purpose (Poels & Cherfi, 2006). Thus, based on the preceding literature, the research model in the current study was derived (see Fig. 1).

Based on the aforementioned literature, the following hypotheses were derived:

*H1: Information quality has a direct positive effect on employee's work-life balance*

*H2: System quality has a direct positive effect on employee's work-life balance*

*H3: Service quality has a direct positive effect on employee's work-life balance*

## 3. Research methods

The respondents of this study are employees from ICT companies in Cyberjaya, Malaysia. These employees are chiefly employed in companies that provide shared services and outsource operations and work on 24/7 operations. According to Hair, Ringle, and Sarstedt (2011), the acceptable sample size ratio is ten-to-one. Non-probability purposive sampling was used in this study because we could not obtain a list of all of the elements of the population. Thus, only ICT employees from multimedia super corridor (MSC) companies were selected. A total of 150 self-administered questionnaires distributed to obtain data from the respondents. A multiple method of data collection was employed, through e-mail and individual administration of questionnaires. Distributing and collecting the questionnaires took approximately three months. However, only seventy-nine (79) people responded to this survey, thereby generating a response rate of roughly 53%. A five-point Likert scale was adopted in the questionnaire to collect data for each construct of the research model. The instruments used were adapted from the previous literature and customized to measure the effect of the constructs on WLB. The questionnaires were designed based on several item-measurement scales adapted from previous studies by Bharati and Chaudhury (2004), Rivard, Raymond, and Verreault (1997), Petter, DeLone, and McLean (2008), Bailey and Pearson (1983), Kettinger and Lee (1999), Carr and Smeltzer (2002), Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964), Moen, Kelly, Tranby, and Huang (2011), and Kim (2014). However, these scales may have some limitations as illustrated by DeVellis (2011), Spector (1992), whereby the 5 point Likert scale might inadvertently induce range restriction effects (Aguinis, Pierce, & Culpepper, 2009).

## 4. Data analysis and results

Validity and reliability are the two majorconditions used for testing the goodness of measures. According to Sekaran and Bougie (2010), reliability refers to the consistency ofan instrument in measuring a concept, whereas validity determines how a developed instrument effectively measures the particular concept it intends to measure. Partial least squares (PLS) employing SmartPLS 3.0 (Ringle, Wende, & Will, 2005) and Statistical Package for Social Sciences were used to analyze and report the data. PLS is second-generation multivariate technique that simultaneously evaluates the measurement model (i.e., the relationships between the construct and the corresponding indicators and the structural model) while aiming to minimize the error variance (Gil-Garcia & Luna-Reyes, 2008). As recommended by Chin (1998) and Gil-Garcia and Luna-Reyes (2008) a

bootstrapping (5,000 samples) was employed to determine the significance levels for loadings, weights, and path coefficients. According to Sekaran and Bougie (2010), construct validity demonstrate how well the results obtained from the use of the measure fits the theories around which the test is designed for the measurement model (see Fig. 2).
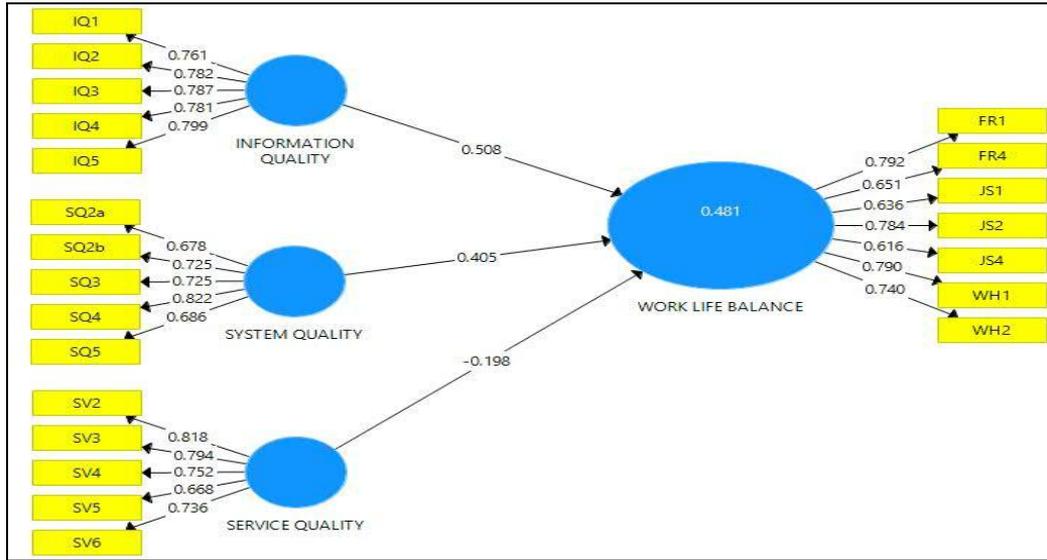


**Fig. 2.** Measurement model

**Table 1**
Measurement model

| Constructs | Item | Loadings | AVE | CR | CA | VIF |
|---|---|---|---|---|---|---|
| Information Quality | IQ1 | 0.761 | 0.612 | 0.887 | 0.842 | 1.475 |
| | IQ2 | 0.782 | | | | |
| | IQ3 | 0.787 | | | | |
| | IQ4 | 0.781 | | | | |
| | IQ5 | 0.799 | | | | |
| Service Quality | SV2 | 0.818 | 0.57 | 0.869 | 0.812 | 1.883 |
| | SV3 | 0.794 | | | | |
| | SV4 | 0.752 | | | | |
| | SV5 | 0.668 | | | | |
| | SV6 | 0.736 | | | | |
| System Quality | SQ2a | 0.678 | 0.532 | 0.85 | 0.778 | 2.056 |
| | SQ2b | 0.725 | | | | |
| | SQ3 | 0.725 | | | | |
| | SQ4 | 0.822 | | | | |
| | SQ5 | 0.686 | | | | |
| Work-Life Balance | FR1 | 0.792 | 0.517 | 0.881 | 0.843 | |
| | FR4 | 0.651 | | | | |
| | JS1 | 0.636 | | | | |
| | JS2 | 0.784 | | | | |
| | JS4 | 0.616 | | | | |
| | WH1 | 0.79 | | | | |
| | WH2 | 0.74 | | | | |

Note: SV1, SQ1, FR2, FR3, and JS3 were deleted due to low loadings

Factor loadings were analyzed and some low-loading items were deleted to enhance the analysis of the data. Based on the work of Hair, Ringle, and Sarstedt (2011), the current study extracted factor loadings, composite reliability (CR), and average variance to assess the convergence validity. The recommended values for the loadings, average variance extracted (AVE), and CR should be >0.5, >0.5, and >0.7, respectively. Thus, the results in Table 1 indicate that the AVE and CR are within the acceptable range.

Discriminant validity was assessed by examining the correlations between the measures of potentially overlapping constructs. According to Fornell and Larcker (1981), items should exhibit stronger loadings on their own constructs as opposed to other constructs in the model, and the average variance between each construct and its measures should be greater than the variance shared between the construct and other constructs. The squared correlations for each construct are lesser than the average variance extracted by the indicators measuring the construct, as described in Table 2, thereby indicating sufficient discriminant validity. Overall, the measurement model verified sufficient convergent validity and discriminant validity. Therefore, the measurements for this study are reliable.

**Table 2**
Discriminant validity

| Constructs | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Information Quality | **0.782** | | | |
| 2. Service Quality | 0.482 | **0.755** | | |
| 3. System Quality | 0.545 | **0.67** | **0.729** | |
| 4. Work-Life Balance | 0.633 | 0.318 | 0.549 | **0.719** |

Note: Diagonals represent the square root of the AVE, whereas the off-diagonals represent the correlations

### 4.1. Hypothesis testing

Subsequently path analysis was performed to test the three hypotheses generated, as shown in Fig.3 and Table 3. To evaluate the predictive power of the structural model, R2 was calculated. The R2 value was 0.481. This result suggests that 48.1% of the variance in WLB can be explained by information quality, system quality, and service quality. Evidently, information quality is positively significant (Beta=0.508 and p<0.01) to WLB; similarly, system quality is positively significant (Beta=0.405 and p<0.01) to WLB. By contrast, service quality is not significant to WLB. Thus, H1 (5.423) and H2 (3.525) in this study are supported, whereas H3 is not supported. The most significant predictor of employee WLB is information quality, followed by system quality.

**Table 3**
Hypothesis testing

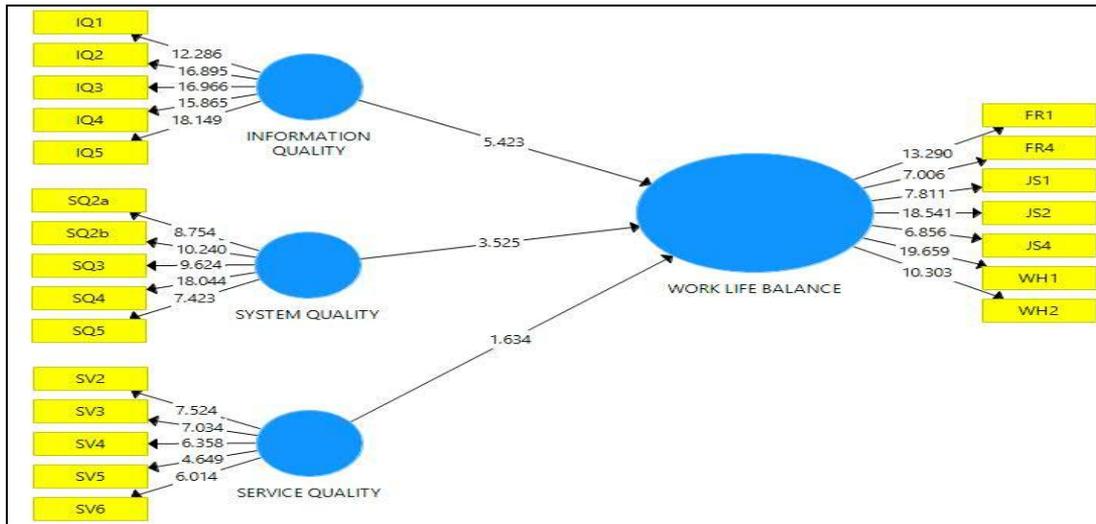| | Hypothesis | Beta | Std. Error | t-value | Decision |
|---|---|---|---|---|---|
| H1 | Information Quality -> Work-Life Balance | 0.508 | 0.094 | 5.423** | Supported |
| H2 | System Quality -> Work-Life Balance | 0.405 | 0.115 | 3.525** | Supported |
| H3 | Service Quality -> Work-Life Balance | -0.198 | 0.121 | 1.634 | Not Supported |

Note: **p< 0.01, *p< 0.05

**Fig. 3.** Results of path analysis

## 5.   Conclusion

Out of three (3) hypotheses tested, two were found significant (H1 and H2) and H3 was found to be not significant. The rationale and explanations are explained below.

   *H1: Information quality has a direct positive effect on employee's work-life balance. (Supported)*

Rationale:

ICT employees preferred to have easy access to information and the information has to be clear, well formatted and prompt and available in order to provide them with lesser stress and better work life balance. Timeliness, accuracy and security of the information are also crucial.

   *H2: System quality has a direct positive effect on employee's work-life balance. (Supported)*

Rationale:

Respondents have opted that system performance at a desirable level reduces the time to perform a task effectively and reduces stress and increases employee wellbeing. Reliability, flexibility, adaptability and easy connectivity ensure less time taken and indirectly ease employees to complete their tasks.

   *H3: Service quality has a direct positive effect on employee's work-life balance. (Not Supported)*

Rationale:

Service quality does not play a role on work-life balance. This may be because expectations and performance of employees towards customers do not really affect their work-life balance but in turn may have a significant relationship directly with their performance and organizational productivity.

This study is motivated by the increasing pressure and stress among ICT employees in Malaysia. It seeks to contribute toward a digital Malaysia where ICT employees are encouraged to work from various geographical locations and time periods due to the current trend of the globalization of ICT services. The study also intends to determine the role of ISQ with respect to WLB. It examines the variables of ISQ, namely, information quality, system quality, and service quality, as independent variables that contribute toward an enhanced WLB. The results of the study verify the positive roles of information quality and system quality in supporting the WLB of ICT employees in Malaysia. Thus, a new ISQ–WLB model may be derived from this study, which will enable ICT industries to further enhance their WLB initiatives by providing employees with suitable devices and gadgets. This study further supports the IS Success Model of DeLone and McLean and explains how this model may be enhanced with the possible link to employee WLB. Furthermore, the dominance of millennials in the present ICT workforce has motivated employers to offer a conducive and technically sophisticated environment. The rapid adaptability of millennials to the changing ICT environment has significantly contributed to the incorporation and empowerment of the remote working approach to balance their profession and social life. These digital natives seem to be extremely comfortable with flexibility and sophisticated equipment to perform their daily tasks. This aspect is one of the driving forces for the future because these millennial employees will eventually dominate the workforce in the coming years. Some multinational companies have gained substantial benefits and profits by adopting a well-connected, flexible, and committed workforce that supports the organizations' business and clients around the world on a round-the-clock shift as opposed to a traditional office-based environment.

## 6. Limitations and future research

The results obtained in this study are based on a survey of the employees in ICT companies based in MSC. The respondents were selected using purposive sampling from companies situated around Selangor and Kuala Lumpur, particularly Cyberjaya. However, generalizing the findings based on the responses of a sample in a specific category of employees to the role of ISQ in their WLB and performance is difficult. The respondents' views and perceptions of WLB may vary from person to person, as well as from company to company. This result is attributed to the different company cultures imposed one employees who work in the ICT sector. Some companies are flexible, whereas others are relatively rigid. Some companies provide employees with the facilities when the employees work from a remote location, whereas others do not provide and expect employees to have such facilities. In such cases where the facilities are not standardized, employee perceptions toward the role of ISQ vary because of the availability of sophisticated or unsophisticated gadgets. Foreign expatriates from different countries who work in multinational companies in Malaysia may have different perceptions on ISQ and WLB because of various cultural backgrounds as well as commitments. Employees with families may likely have different commitments compared with their single/unmarried counterparts. This study may also be extended to other industries and sectors with increased dependencies onsophisticated IT tools and gadgets. Furthermore, it can be replicated to other parts of Malaysia and in countries that are still at its infancy of the adoption of providing global ICT services. The role of demographics, such as marital status, gender, number of children, and family commitments, may be viewed as a future direction for research. Behavior patterns and moods could also be a possible dimension to consider for future research under the assumption that the mood or behavior of an

individual may contribute to the use of technology and its perceived usefulness and comfort to improve WLB.

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