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European Conference on Information Systems (ECIS)

2009

# The development and test of a relationship model on system use, job learning, and impact

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# THE DEVELOPMENT AND TEST OF A RELATIONSHIP MODEL ON SYSTEM USE, JOB LEARNING, AND IMPACT


## Abstract

*This exploratory study examined the role of job learning on the relationship between information systems use and impact. Data from 308 end-users were analyzed to evaluate the relationship between systems use, job learning, and technology impact. System use was conceptualized as decision support, work integration, and customer service. Technology impact was conceptualized as effect on management control, task innovation, task productivity, and customer satisfaction. Two sets of hypotheses are presented for these relationships. Results suggest that the pattern of system use significantly and positively influenced job learning. Job learning was found to significantly and positively influence technology impact. We theorize that individuals learned about their job as a result of systems usage. In turn, job learning influenced technology impact. The study findings are discussed.*



*Keywords: system use, job learning, information technology impact.*

# THE DEVELOPMENT AND TEST OF A RELATIONSHIP MODEL ON SYSTEM USE, JOB LEARNING, AND IMPACT

## 1. INTRODUCTION

Information technology continues to play a pivotal role in the structure of work and human productivity. Organisations often attribute their high performance to effective application of information systems. Increasingly, information system executives are required to explain technology expenditures in terms of individual benefits and organisational outcomes. Specifically, organisations are becoming increasingly concerned about what technology use means in the context of the organisation. For example: changes in management control, innovation, productivity, and customer satisfaction. Because of this, the system success paradigm has progressed from an emphasis on 'suitability for use' where design features such as content, accuracy, format, and ease of use are considered important, to an emphasis on 'benefit of use' where systems' impact on the individual and the organisation is considered essential (Melone 1990, Torkzadeh and Doll 1999).

Research studies have addressed information technology impact from a variety of perspectives including: new ventures (Fairlie 2006), business performance (Brynjolfsson & Hitt 2000), competitive advantage (Sethi & King 1994), organisational strategy (Mahmood 1991), time management (Sulek & Marucheck 1991), and industry level (Segars & Grover 1994). Increasingly, the relevant question about information technology impact relates to the nature of that impact and how it occurs. Impact through use is one area of investigation suggested (Torkazdeh & Doll 1999). Although it is quite obvious system use would lead to impact, the unanswered question is how. We propose job learning as one possible mechanism in this regard.

As individuals interact with system applications, they learn about their job, and as a result, become more productive. Information technology plays an important role in job learning, and individual productivity. Because of this, information technology plays a critical role in the expansion of knowledge; learning becomes a new form of labor (Zuboff 1988). "Learning is no longer a separate activity that occurs either before one enters the workplace or in remote classroom setting." "Learning is the heart of productive activity"(Zuboff 1988, p. 395). For the individual, information technology holds promise in terms of job enhancement and the outcome of labor. Information technology impacts how a job is performed and what the outcome might be. Thus, there is a need for better understanding the nature and outcome of the interaction between people and technology in an organisational context.

This exploratory study examines the relationship between system use, job learning, and technology impact. Previously published measures of systems use and technology impact as well as a newly developed measure of job learning are used to collect data from 308 end-users and to examine this relationship. Measures of system use exhibit patterns of use in terms of decision support, work integration, and customer service. Measures of technology impact evaluate perceived outcomes in terms of management control, task innovation, task productivity, and customer satisfaction. Measures of job learning reflect technology influence on the ability to learn and perform job functions as well as to improve the quality of work. In the following section we will review the relevant literature, develop hypotheses, describes the structural model and measures, describe our results, and finally draw conclusions.

# 2. REVIEW OF LITERATURE AND RESEARCH HYPOTHESES

## 2.1 System Use

The measurement of information systems success continues to be an important topic for research and practice. At least two perspectives exist in the literature for measuring systems success: the design perspective and the outcome perspective. The design perspective has a strong tradition in the MIS field and involves evaluating systems relative to design specifications or user needs. The outcome perspective calls for performance-related evaluations that focus on outcomes. Measures of user satisfaction (Doll & Torkzadeh 1988) and perceived usefulness (Davis 1989) are widely accepted examples of the design perspective. Measures of technology impact on work (Torkzadeh & Doll 1999) and technology impact on competitive advantage (Sethi & King 1994) are good examples of the outcome perspective.

System use has also been considered as a measure of system success in earlier research studies (Hamilton & Chervany 1981, Ives et al. 1980, Ein-Dor & Segev 1978). It has been viewed as an important construct in conceptualizing information system success (Doll & Torkzadeh 1998, DeLone & McLean 1992). However, other studies argue that the critical success factor in technology investment is not system use in and of itself, but the net benefits to organisations that occurs from that use (Seddon 1997, Szajna 1993). Therefore, while system use is a pivotal link in the 'system-to-value chain' from technology adoption to social and economic impact (Doll & Torkzadeh 1991), it is the outcomes of use that reflect system success. In this taxonomy user satisfaction and perceived usefulness are expected to influence system use.

There is a great diversity of system use constructs in information system research (Burton Jones & Straub, 2006). While the emphasis of IS literature on system use is more concerned with the justification for creating and/or utilizing information systems, the social science literature on the nature of work views information technology as being used by individuals in a work context to perform certain organisationally relevant functions (Doll & Torkzadeh, 1998). For example, information technology is used to communicate with subordinates and superiors, to facilitate problem solving, to plan team work, to service customers, and to rationalize decisions, etc.

In order to measure how information technology is actually used by individuals in an organisational context, Doll and Torkzadeh (1998) developed a multidimensional instrument for technology utilisation for the three functions of decision support, work integration, and customer service. The decision support function was defined in terms of 'problem solving' (the extent that information technology is used to analyse cause and effect relationships and to make sense out of data) and 'decision rationalisation' (the extent that information technology is used to improve the decision making processes or explain/justify the reasons for decisions). Work integration was defined in terms of 'horizontal integration' (the extent that information technology is used to coordinate work activities with others in one's work group) and 'vertical integration' (the extent that information technology is used to plan one's own work, monitor performance, and communicate vertically to coordinate one's work with superiors and subordinates). Customer service was defined as: the extent that information technology is used to service internal and external customers. These constructs are adopted for the current study.

## 2.2 Job Learning

Job learning is an important aspect of performance. Although most positions require evidence of capabilities/skills from employees, a large part of learning occurs as the work is being performed. Learning in the workplace has been characterized as the process of seeking technical, referent, and normative information (Morrison 1993). While employees are charged with the responsibility to exhibit learning behaviour, the organisation needs to provide the opportunities for the employees to learn. Extending work-based learning from the individual, to the group, and to the entire organisation prompted the development for the concept of learning organisation. Implementation of knowledge management systems is one consideration for organisation to provide and/or enhance work-based learning through application of information technology.

Although there is a long history of information systems use at the workplace, research on how this use affects job learning is very limited. As individuals interact with technology to accomplish tasks, they learn more about their job and become more innovative in carrying out responsibilities (Ruiz-Mercader, et al. 2006). Information technology enables employees to deliver more value to the customer (Harvey et al. 1993). The use of information technology is expected to enrich and broaden jobs (Long 1993). Employees use information technology in innovative ways to enhance their customer service. Customer relationship management (CRM) systems are a good example of applications that help employees to develop new and innovative ways of providing customer service. Cross-functional integration and effective data processing provided by CRM applications enable employees to access customer profiles and product information and even predict customer needs (Torkzadeh et al. 2006, Reinartz et al. 2004).

Since the focus of this study is based on system use, we need to examine job learning in the same context. Therefore, we define job learning as a user's perception of the extent an application enhances learning about the job/task performed. As an employee uses systems for decision support, s/he would likely learn more about the decision variables that need to be included as well as justification for the decision. By using systems to coordinate and communicate with others, the user would see the benefit of the system for learning about the people and work flow related to the task at hand. The enhancement of job learning through system use should eventually produce positive outcomes.

### 2.3 Impact

Information technology has influenced the nature of work, the process of learning and ways of accomplishing organisationally relevant tasks. Organisations are increasingly interested in the extent and the nature of their IT investment outcomes, and how application development and acceptance benefits their bottom line. While adoption and use of information technology continues to be an important goal of information system executives, there is an increased emphasis on the net benefits that emerge from system use (Seddon 1997). Information system executives are expected to explain the value and contribution of information technology expenditure in terms of increased productivity, quality, and competitiveness (Myers et al. 1997).

Traditional approaches for measuring technology impact emphasize productivity and management control. The extent of information technology use and its influence on productivity and management control has long been the focus of attention (Weick 1990, Zuboff 1988, Braverman 1974). MIS researchers have devoted considerable attention to the impact of information technology on productivity (Sulek & Marucheck 1992, Cooper & Zmud 1990, Kraemer & Danziger 1990, Hirschhorn & Farduhar 1985). More recently that emphasis has included technology impacts on innovation and customer service. In addition to productivity and management control, information technology impacts on innovation and customer satisfaction have also gained increased attention (Filiatrault et al. 1996, Harvey et al. 1993, Davis 1991, Curley & Pyburn 1982).

To help management distinguish between effective and ineffective applications, Torkzadeh and Doll (1999) developed a set of outcome measures in the context of management control, task innovation, task productivity, and customer satisfaction. Management control was defined as: the extent that the application helps to regulate work processes and performance. Task innovation was defined as: the extent that an application helps users create and try out new ideas in their work. Task productivity is defined as: the extent that an application improves the user's output per unit of time. Customer satisfaction was defined as: the extent that an application helps the user create value for the firm's internal or external customers. To the extent that these constructs relate to organisationally relevant outcomes they are appropriate for the context in which this study was carried out. We adopt these concepts of technology impact in this study.

Based on review of the literature presented in this section, two sets of hypotheses are presented that describe the relationship between system use and job learning, and job learning and the impact of technology on work and its components. In this model, job learning is considered the intervening variable between system use and technology impact, as depicted in Figure 1.

H1: Systems use measured in terms of *decision support* is expected to be positively related to job learning.

H2: Systems use measured in terms of *work integration* is expected to be positively related to job learning.

H3: Systems use measured in terms of *customer service* is expected to be positively related to job learning.

H4: Job learning is expected to be positively related to information technology impact in terms of *management control*.

H5: Job learning is expected to be positively related to information technology impact in terms of *task innovation*.

H6: Job learning is expected to be positively related to information technology impact in terms of *task productivity*.

H7: Job learning is expected to be positively related to information technology impact in terms of *customer satisfaction*.

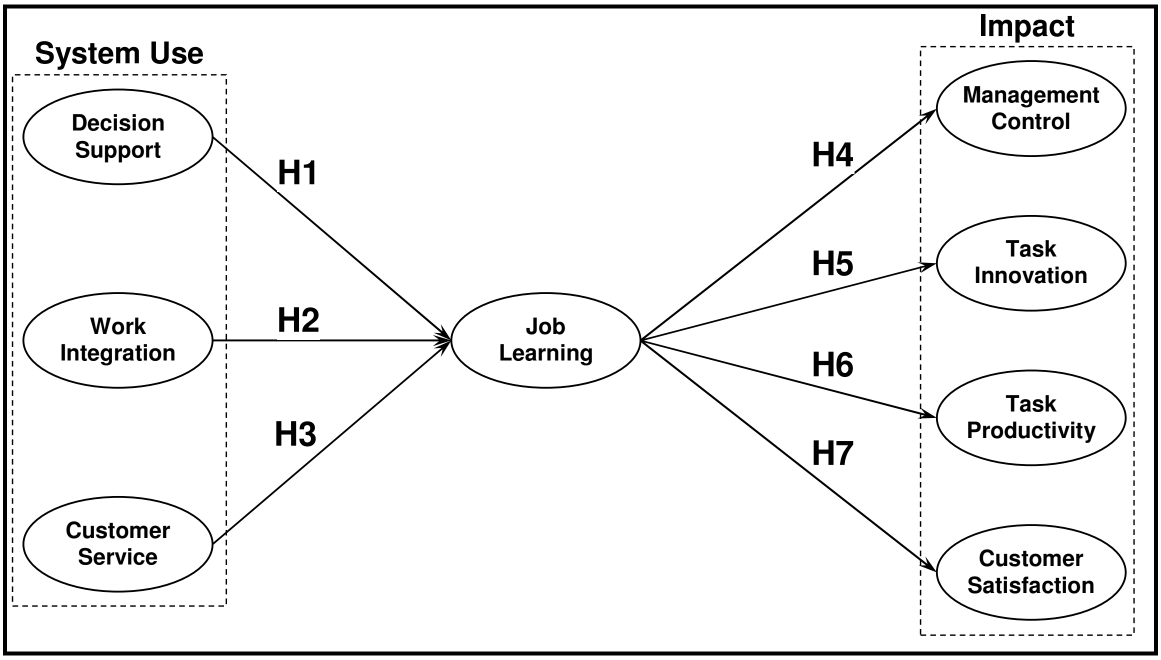


*Figure 1: The Usage-Learning-Impact Relationship Model*

# 3. RESEARCH METHODS

### 3.1 Operationalisation of Constructs

To examine the relationships depicted in Figure 1, a combination of published and newly developed measures were used to collect the data. In this study, the three-factor measurement model developed by Doll and Torkzadeh (1998) was used to operationalise system use. The instrument consists of 13, 11, and 5 items for decision support, work integration, and customer service, respectively. Examples of system use items include: 'I use this application to control or shape the decision process,' 'I use this application to plan my work', and 'I use this application to improve the quality of customer service'.

To measure technology impact, the four-factor measurement model of information technology impact developed by Torkzadeh and Doll (1999) was used. Each of the four constructs (task productivity, task innovation, customer satisfaction, and management control) is measured using 3 items. Examples of technology impact items include: 'This application improves management control', 'This application helps me create new ideas', 'This application increases my productivity', and 'This application improves customer service'. Both system use and technology impact instruments were measured using a 5-point Likert-type scale anchored by (1) "Not at all" and (5) "A great deal."

Job learning was operationalised using eight items that asked respondents how information technology influenced their job learning. Although there is a broad understanding that information technology is a learning tool and that it has the potential to help employees learn more about their jobs and how to better perform, to the best of our knowledge, there are no job learning measures linking technology to job learning. Literature on productivity and organization provide a broad background to the understanding of how technology might influence individuals as they go about learning about their jobs and performing their tasks (Weick 1990, Braverman 1974, Zuboff 1988). That literature suggests that information rich organizations are learning environments with the purpose to be more productive (Zuboff 1988). Job learning in this study was conceptualized in terms of how technology assists individuals become more skilful at doing what they are supposed to do as well as help them to better perform their assigned tasks.

Survey items were generated to operationalize technology as it helps the individual "how to do things, rather than what to do or why" (Zuboff 1988, p. 206). This conceptualization also suggests that technology helps the individual to understand the job better as well as to perform the job more effectively. Survey items also intended to assess whether information technology would increase employees' capabilities to enrich and expand jobs (Lang 1993). Examples of job learning indicators in this study include: 'This application increases the ability required to do my job', 'This application helps me learn how to improve the quality of my work', 'This application increases the capabilities required to do my job', and 'This application helps me better understand my job'. A Likert-type scale similar to the one used in system use and technology impact measures was used for these questions. The job learning measure was found to be both reliable and valid (reported below).

### 3.2 Sample

A survey questionnaire comprised of 30 items measuring system use, 8 items measuring job learning, and 12 items measuring technology impact was used to collect data. The survey was also used to collect respondent information, type of application, and the level of use.

The respondents relied heavily on specific applications for completing their job functions. By collecting data from users who relied heavily on the use of a specific application, the researchers were confident that respondents could identify patterns of application use in their organisational context, how the application helped them learn about their job, and how they viewed the impact of job learning on how the technology impacted their work. Demographics revealed a broad industry representation. Respondents worked for government agencies (19.5%), manufacturing (16.2%), health service (14.6%), transportation (12.6%), education (9.3%), finance (8.8%), wholesale and retail (4.9%), and others (14%). Several incomplete responses were discarded and a sample of 308 complete responses to all constructs was used for analysis. Discarded responses were considered too few to suggest a meaningful difference between incomplete and complete responses. Major applications include office automation applications (22.5%), financial applications (20.9%), and accounting applications (13.5%).

## 4. DATA ANALYSIS AND RESULTS

We used partial least squares (PLS-Graph 3.0) to analyze the proposed relationships. PLS is suitable because the aim of the study is to examine the predictive validity of the 'system use' and 'job learning' constructs. In addition, PLS relaxes certain distributional assumptions and is considered appropriate for exploratory. Kolmogorov-Smirnov's test of normality indicates that none of our measurement items are normally distributed. All items are modeled as reflective according to their original design. The measurement and structural model were tested simultaneously. Since PLS does not produce fit statistics, we followed the general criteria of item loadings above .7, path coefficients above .2 (Chin 1998), and t-statistics for item loadings and path coefficients generated from bootstrapping (100 resamples) to evaluate the analysis results.

Because the items for 'job learning' were developed for this study, we first ran exploratory factor analysis to examine the factor structure for these items. All eight items loaded on one factor with strong loadings that range from .745 to .854 and explained 66% of the available variance. Cronbach's alpha for the eight items is .92 and all corrected item-total correlations are above .7, indicating good internal consistency. Thus all eight items for the job learning' measure were retained.

Results of the PLS measurement model (i.e., item loading, cross-loading, t-statistics, composite reliability, and AVE) are presented in the Appendix. Most item loadings are above .7 and all loadings are significant. Although a few items have marginal loadings, we decided to retain them to be consistent with the original instruments. Although some cross-loadings were observed, all items loaded highest on their respective factors. The composite reliabilities and AVE of all factors are above the accepted .7 and .5 level, respectively. The discriminant validity of the measures is verified by comparing the square root of AVE and cross-construct correlations. As can be seen on Table 1, all correlations are smaller than its respective square-root of AVE. These results provide evidence for convergent and discriminant validity for the measures of 'job learning' construct as well as the system use and technology impact constructs.

Table 1. Measurement Model Results

| Construct | Make Decisions | Integrate Work | Service Customer | Job Learning | Management Control | Task Innovation | Task Productivity | Customer Satisfaction |
|---|---|---|---|---|---|---|---|---|
| Make Decisions | **0.7937** | | | | | | | |
| Integrate Work | 0.7185 | **0.7183** | | | | | | |
| Service Customer | 0.3810 | 0.4089 | **0.8408** | | | | | |
| Job Learning | 0.5525 | 0.5506 | 0.5133 | **0.8093** | | | | |
| Management Control | 0.5714 | 0.5785 | 0.5007 | 0.6198 | **0.8809** | | | |
| Task Innovation | 0.5488 | 0.5226 | 0.3592 | 0.6758 | 0.4292 | **0.9088** | | |
| Task Productivity | 0.4276 | 0.4035 | 0.4260 | 0.6752 | 0.5006 | 0.4476 | **0.8746** | |
| Customer Satisfaction | 0.5337 | 0.3182 | 0.7769 | 0.5265 | 0.5337 | 0.3321 | 0.4458 | **0.9359** |

Bold = square root of AVE.

The results of the PLS structural model are presented in Figure 2. All system use constructs significantly affected job learning with path coefficients above .2 explaining over 40% ($R^2$=.437) of the variance. Effect sizes were calculated based on the procedure recommended by Chin (1998), and are 0.4, 0.4, and 0.14 for Decision Support, Work Integration, and Customer Service, respectively; indicating small to medium effects. This supports hypotheses 1-3. Job learning also significantly affected each of the 'impact' constructs. Path coefficients ranged from .526 to .676, indicating that 'job learning' strongly influenced the 'impact' constructs. Job learning also explained a significant amount of variance in the impact constructs (.277 to .457). This supports hypotheses 4-7.

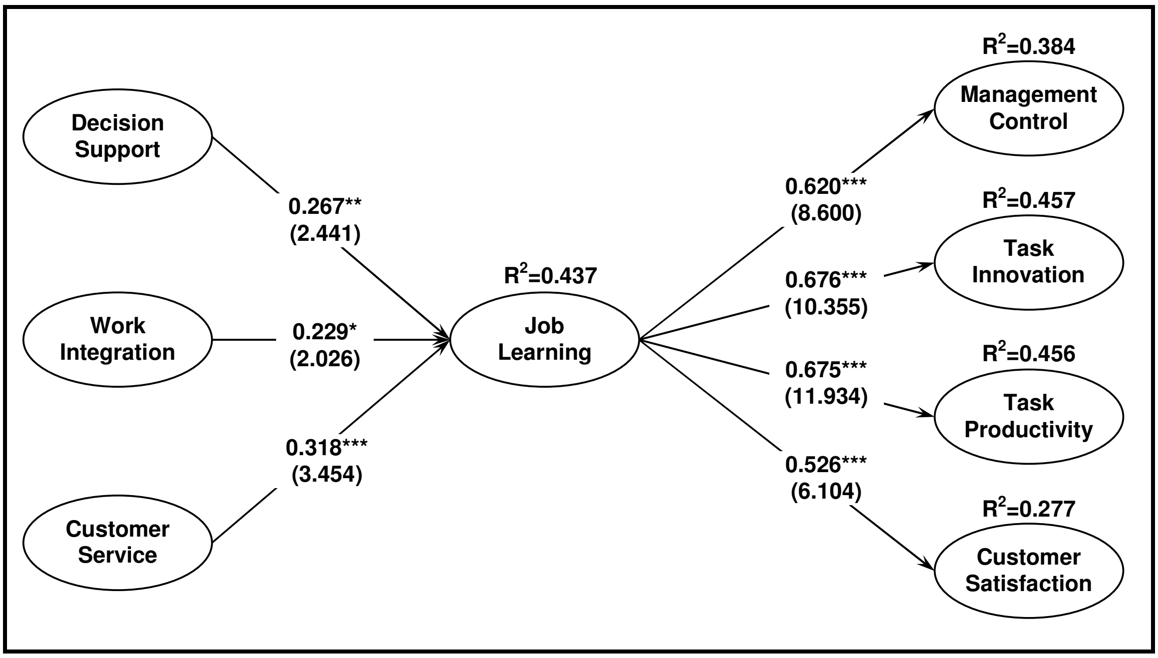


*Figure 2: Structural model results*

## 5. DISCUSSION AND CONCLUSION

Employees use information technology in an organisational context to accomplish specific tasks and carry out responsibilities. The measurement of information technology use in information systems research has progressed from the traditional focus on the level and frequency of computer use to the conception that incorporates intent and pattern of use. Research interest in this domain has moved from how much technology is used to ways in which technology is used. This latter conceptualization has implications for evaluating technology impact on work; how we evaluate the influence of system use on the nature of work and productivity.

Individuals interact with technology applications to explore ways to improve their job performance, and in that fusion of exploring and doing, they learn and enhance their knowledge about their job. Learning becomes a part of what they need to do in order to do it better. Learning processes occur in the context of work and employees learn as they go about solving problems (Bereiter 2002). In evaluating technology impact, we must go beyond what individuals currently do and examine how prepared they are to do what they need to do next. Formal training is expected to provide the individual with core competency and fundamental knowledge to know how to learn on the job. Employee skills are developed in a learning environment that includes work settings, tools, problems, and co-workers who have common purpose (Lambrecht et al. 2004). Because we are evaluating the impact of technology in organisational contexts we are evaluating the interaction of people and technology in an organisational environment rather than separately evaluating the individual, the technology, or the organisation. This conceptualization is helpful in explaining the perception of a widening gap between the potential of information technology and its actual use, and, represents a major contribution towards work in this important area

This view of system use and technology impact in an organisational context influenced the researchers during the design and implementation of the current study. Our premise is that when information technology is used by individuals in new ways, that interactive effect has important implications for the nature of work, the need to learn and innovate, and the approach to decision problems. Specifically, our objectives were: (a) to evaluate system use in terms of a ‘function’ that individuals could easily relate to in their work context (e.g., to rationalize decisions, to make sense out of data); (b) to evaluate technology impacts in terms of organisationally relevant outcomes (e.g., improved customer service, improved productivity); (c) to evaluate job learning as a behavior that links system use with the perceived impact of technology; and (d) to extend the conception of technology impact beyond the traditional focus on productivity and management control and to include dimensions of customer satisfaction and task innovation that are relevant to the success and survival of modern organisations.

We encourage confirmatory studies of these findings for specific industries (e.g., service), in specific settings (e.g., in an environment where user participation in system development is strong or where the majority of developmental activities are offshored), and for specific technologies (e.g., customer relationship management). Studies that are more focused on an industry, environment, or technology would demonstrate the potential benefits for research and practice in these specific settings. In these follow up studies, part or all of the ‘system use’ and ‘technology impact’ constructs may be appropriate.

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# Appendix

## Factor loadings, cross loadings, reliabilities and t-statistics

| Variables | Decision Support | Work Integration | Customer Service | Job Learning | Mgmt. Control | Task Innovation | Task Productivity | Customer Satisfaction | t-value |
|---|---|---|---|---|---|---|---|---|---|
| Decision Support (Composite Reliability = 0.957, AVE = 0.630) | | | | | | | | | |
| DS1 | **0.872** | 0.639 | 0.258 | 0.450 | 0.465 | 0.528 | 0.334 | 0.251 | 30.505 |
| DS2 | **0.854** | 0.616 | 0.347 | 0.458 | 0.490 | 0.478 | 0.372 | 0.333 | 25.261 |
| DS3 | **0.822** | 0.576 | 0.256 | 0.429 | 0.494 | 0.482 | 0.377 | 0.259 | 21.707 |
| DS4 | **0.815** | 0.575 | 0.365 | 0.420 | 0.509 | 0.366 | 0.309 | 0.360 | 19.385 |
| DS5 | **0.812** | 0.595 | 0.369 | 0.454 | 0.447 | 0.475 | 0.270 | 0.358 | 19.405 |
| DS6 | **0.804** | 0.606 | 0.350 | 0.465 | 0.458 | 0.421 | 0.407 | 0.324 | 19.636 |
| DS7 | **0.802** | 0.570 | 0.294 | 0.355 | 0.421 | 0.398 | 0.260 | 0.254 | 16.875 |
| DS8 | **0.785** | 0.565 | 0.227 | 0.416 | 0.413 | 0.457 | 0.284 | 0.207 | 15.484 |
| DS9 | **0.784** | 0.576 | 0.286 | 0.488 | 0.490 | 0.364 | 0.341 | 0.308 | 19.030 |
| DS10 | **0.779** | 0.515 | 0.287 | 0.407 | 0.416 | 0.433 | 0.354 | 0.236 | 15.140 |
| DS11 | **0.773** | 0.589 | 0.268 | 0.476 | 0.452 | 0.472 | 0.327 | 0.260 | 15.888 |
| DS12 | **0.703** | 0.461 | 0.353 | 0.506 | 0.433 | 0.427 | 0.425 | 0.318 | 11.831 |
| DS13 | **0.691** | 0.520 | 0.232 | 0.275 | 0.369 | 0.308 | 0.309 | 0.180 | 10.105 |
| Work Integration (Composite Reliability = 0.927, AVE = 0.516) | | | | | | | | | |
| WI1 | 0.547 | **0.824** | 0.355 | 0.417 | 0.460 | 0.414 | 0.302 | 0.248 | 18.047 |
| WI2 | 0.472 | **0.762** | 0.273 | 0.361 | 0.297 | 0.397 | 0.313 | 0.155 | 11.469 |
| WI3 | 0.460 | **0.758** | 0.315 | 0.343 | 0.349 | 0.404 | 0.286 | 0.177 | 11.557 |
| WI4 | 0.502 | **0.739** | 0.276 | 0.386 | 0.392 | 0.363 | 0.344 | 0.158 | 12.685 |
| WI5 | 0.571 | **0.710** | 0.359 | 0.492 | 0.492 | 0.424 | 0.301 | 0.354 | 12.076 |
| WI6 | 0.446 | **0.703** | 0.324 | 0.363 | 0.458 | 0.288 | 0.257 | 0.296 | 9.629 |
| WI7 | 0.483 | **0.702** | 0.168 | 0.340 | 0.420 | 0.273 | 0.281 | 0.128 | 10.819 |
| WI8 | 0.625 | **0.699** | 0.311 | 0.505 | 0.443 | 0.454 | 0.273 | 0.304 | 11.774 |
| WI9 | 0.512 | **0.690** | 0.292 | 0.379 | 0.413 | 0.388 | 0.250 | 0.289 | 9.536 |
| WI10 | 0.508 | **0.675** | 0.273 | 0.470 | 0.527 | 0.381 | 0.363 | 0.221 | 11.274 |
| WI11 | 0.492 | **0.673** | 0.299 | 0.235 | 0.290 | 0.303 | 0.200 | 0.151 | 8.407 |
| WI12 | 0.496 | **0.665** | 0.222 | 0.248 | 0.279 | 0.314 | 0.241 | 0.118 | 8.027 |
| Customer Service (Composite Reliability = 0.923, AVE = 0.707) | | | | | | | | | |
| CS1 | 0.322 | 0.319 | **0.884** | 0.439 | 0.456 | 0.307 | 0.359 | 0.776 | 26.644 |
| CS2 | 0.299 | 0.294 | **0.880** | 0.408 | 0.388 | 0.232 | 0.375 | 0.680 | 26.070 |
| CS3 | 0.329 | 0.337 | **0.871** | 0.499 | 0.462 | 0.373 | 0.358 | 0.746 | 28.731 |
| CS4 | 0.377 | 0.371 | **0.817** | 0.419 | 0.406 | 0.274 | 0.343 | 0.560 | 15.488 |
| CS5 | 0.272 | 0.409 | **0.746** | 0.379 | 0.383 | 0.311 | 0.361 | 0.471 | 12.341 |
| Job Learning (Composite Reliability = 0.938, AVE = 0.655) | | | | | | | | | |
| JL1 | 0.406 | 0.373 | 0.434 | **0.846** | 0.448 | 0.555 | 0.526 | 0.434 | 18.469 |
| JL2 | 0.377 | 0.379 | 0.450 | **0.842** | 0.451 | 0.501 | 0.609 | 0.470 | 20.197 |
| JL3 | 0.453 | 0.410 | 0.395 | **0.828** | 0.469 | 0.547 | 0.610 | 0.444 | 22.998 |
| JL4 | 0.414 | 0.453 | 0.392 | **0.825** | 0.516 | 0.608 | 0.565 | 0.378 | 19.678 |
| JL5 | 0.405 | 0.456 | 0.341 | **0.813** | 0.490 | 0.633 | 0.550 | 0.351 | 19.619 |
| JL6 | 0.539 | 0.549 | 0.415 | **0.794** | 0.550 | 0.577 | 0.430 | 0.391 | 17.540 |
| JL7 | 0.584 | 0.549 | 0.483 | **0.780** | 0.655 | 0.527 | 0.505 | 0.501 | 14.841 |
| JL8 | 0.371 | 0.372 | 0.405 | **0.740** | 0.402 | 0.413 | 0.582 | 0.431 | 13.085 |
| Management Control (Composite Reliability = 0.912, AVE = 0.776) | | | | | | | | | |
| MC1 | 0.550 | 0.530 | 0.450 | 0.593 | **0.897** | 0.410 | 0.481 | 0.516 | 39.314 |
| MC2 | 0.474 | 0.530 | 0.479 | 0.553 | **0.883** | 0.402 | 0.460 | 0.458 | 25.440 |
| MC3 | 0.482 | 0.464 | 0.389 | 0.484 | **0.863** | 0.314 | 0.372 | 0.430 | 18.189 |
| Task Innovation (Composite Reliability = 0.935, AVE = 0.826) | | | | | | | | | |
| TI1 | 0.489 | 0.479 | 0.304 | 0.591 | 0.372 | **0.926** | 0.420 | 0.278 | 44.889 |
| TI2 | 0.512 | 0.491 | 0.352 | 0.601 | 0.440 | **0.910** | 0.385 | 0.291 | 38.825 |
| TI3 | 0.495 | 0.456 | 0.323 | 0.646 | 0.360 | **0.891** | 0.415 | 0.333 | 33.243 |
| Task Productivity (Composite Reliability = 0.907, AVE = 0.765) | | | | | | | | | |
| TP1 | 0.386 | 0.376 | 0.378 | 0.634 | 0.472 | 0.385 | **0.898** | 0.388 | 26.315 |
| TP2 | 0.400 | 0.360 | 0.373 | 0.632 | 0.424 | 0.439 | **0.880** | 0.406 | 34.000 |
| TP3 | 0.329 | 0.317 | 0.368 | 0.484 | 0.415 | 0.341 | **0.846** | 0.375 | 15.565 |
| Customer Satisfaction (Composite Reliability = 0.954, AVE = 0.876) | | | | | | | | | |
| CS1 | 0.337 | 0.309 | 0.755 | 0.460 | 0.520 | 0.290 | 0.405 | **0.942** | 48.564 |
| CS2 | 0.300 | 0.288 | 0.710 | 0.495 | 0.476 | 0.303 | 0.404 | **0.933** | 42.828 |
| CS3 | 0.370 | 0.296 | 0.715 | 0.518 | 0.502 | 0.336 | 0.438 | **0.928** | 41.017 |