Jurnal Akuntansi dan Auditing Indonesia
www.journal.uii.ac.id/index.php/jaai

Direct and moderating effects of organizational factors on system usage in colleges: a resource-based perspective

Faridiah Aghadiati Fajri[1], Nurisqi Amalia[2]
Departemen Ekonomika dan Bisnis, Universitas Gadjah Mada, Yogyakarta, Indonesia
e-mai: [1]faridiahagha@ugm.ac.id; [2]nurisqi.amalia@ugm.ac.id

ARTIKEL INFO

Article history:
Available online

Keywords:
Net Benefits, Organizational Factors, System Usage

DOI:
https://doi.org/10.20885/jaai.vol22.iss1.art4

ABSTRACT

Colleges as a non-profit organization engaged in the educational sector have a crucial role, especially in emerging countries. Significant improvement can be achieved by continuously strengthening the information system infrastructure. Prior studies mentioned the system implementation is tricky because it involves not only hardware and software but also users and operational procedures. The investment of information system poses challenges for management. The system failure can be the grave of an organization. Therefore, the end-users participation becomes acute that puts organizational factors have to be considered. This study aims to examine and analyze the information system success model by adding the existence of facilitating condition, institutional pressure, and incentives as organizational factors. Data were obtained through questionnaires filled by the users of colleges' system. The results found that two constructs of organizational factors including facilitating condition and institutional pressure were able to increase the role of system usage to organization performance. Managers have to be proactive to motivate the end-users by designing better organizational factors and the future study may improve the construction of these factors.

ABSTRAK

Perguruan tinggi sebagai organisasi nirlaba yang bergerak di sektor pendidikan memegang peranan penting., terutama di negara-negara berkembang. Peningkatan kinerja yang signifikan dapat dicapai dengan memperkuat infrastruktur sistem informasi. Penelitian sebelumnya menyebutkan bahwa penerapan sistem merupakan hal yang rumit karena tidak hanya melibatkan perangkat keras dan perangkat lunak melainkan juga para pengguna dan prosedur operasionalnya. Investasi sistem informasi menjadi tantangan bagi manajemen karena kegagalan penerapannya dapat menjadi akhir bagi organisasi. Oleh karena itu, partisipasi pengguna menjadi penting yang menempatkan faktor organisasi sebagai faktor yang harus dipertimbangkan. Penelitian ini bertujuan untuk menguji dan menganalisis model keberhasilan sistem informasi dengan menambahkan keberadaan beberapa faktor organisasi seperti kondisi yang memfasilitasi, tekanan institusi, dan insentif. Data diperoleh melalui kuesioner yang diisi oleh pengguna sistem informasi di perguruan tinggi. Hasilnya menunjukkan bahwa terdapat dua konstruk faktor organisasi yaitu kondisi yang memfasilitasi dan tekanan institusi yang mampu meningkatkan peran penggunaan sistem terhadap kinerja organisasi. Hal ini mendorong para manajer untuk dapat proaktif dalam memotivasi pengguna dan penelitian selanjutnya untuk dapat mengembangkan konstruk faktor organisasi lainnya.

Introduction

In a classic article, Beyond the Productivity Paradox, Brynjolfsson and Hitt (1998) described how computers can be the catalyst for business process re-engineering. Although, this transformation promise improvements on organization' value chain, there are enormous stories about information system implementation failures. The Standish group disclosed their survey's outcome that the rate of system success implementation was 29%. The others run into some obstacles, such as over budget, over time, unfitted features, and the worst was the cancellation or system failures (Kobelsky, Hunter, & Richardson, 2008). This paradox phenomenon forces managers to construct better methods in order to avoid the debacles while they decide to plant systems.

P ISSN 1410-2420 | E ISSN 2528-6528

Investment in information system leverages the organization achievement according to the concept of the inter-organizational network (Aldrich & Whetten, 1981).

Nowadays, a huge amount of non-profit organization's funding is allocated to the massive development of information system regarding how to provide excellent service, technical support, and communication platform. It also happens in education sectors. This kind of investment would be successful when users optimalize their utilities and get benefits. Their involvement becomes critical factors (Eldenburg et al., 2010; Riketta, 2002; Curtis & Wright, 2001). Therefore, the answer to the question for strategic managers focused on why they vary in performance is the differences of system usage.

Information Computer Technology (ICT) known as drivers of organization performance supports the knowledge creation and the knowledge sharing. ICT enables access to an infinity information availability supporting the decision-makers (Hoong, 2015). Enormous obstacles arise even before the system is implemented. Furthermore, it may not run well if the users avoid following the policies and procedures. The end-users' commitment becomes key features in the information system success. The organization's attainment depends on individual's eager to commit. The management has to concept a big frame of integrated factors to push the system usage. The critical stage is how to definite the smooth transition phase for the users. In addition, obviously, another challenge is how to motivate them.

This article suggests both the direct effect and moderating effect of organizational factors related to the adoption of the college's information system. The data interprets the usage of modules implemented in educational organizations. The net benefits were counted as a proxy to assess the organizational performance. Prior studies added organizational factors as a construct that influenced the intention to use. This study aims to develop an extended model of information success including the direct and moderating effect of organizational factors.

This research data was mostly taken with online questionnaires resulting in the assumption that colleges in Indonesia have been already using the information system. The effect of information systems implementation can be shown as net benefits. Organizations which can rapidly modify or upgrade their technology were able to reach their highest business process agility (Chen et al., 2014). Focused on the advantages, education institutions may relish their information system investment. Information system improves the ability to build effective communication and data exchange among all departments across the boundaries. Moreover, it also increases operational productivity, raises the information quality, and reduces the organization's expenditures.

Structural Capital (Edvinsson & Sullivan, 1996) is the infrastructure including both direct and indirect supports. Direct support is things which immediately related to human resource, for instance, computers, telephones, and computer software. On the other hand, the examples of indirect support are buildings, electricity, and plumbing. The existence of structural capital boosts institutes to obtain the organizational knowledge and transform it into intellectual assets. Recent studies found that intellectual capital is the main root of value and productivity leverage which has a bigger impact than three components of conventional business lore conditions (customer needs fulfillment, legally protected, and become pioneer).

The theory of organizational information processing (Galbraith, 1974) mentioned that an organization has to process their data as basic tasks which provide relevant information for decision-makers. Adequate information improves their planning ability, environment changing adaptability, and cost reducing for better productivity. Tanriverdi and Ruefli (2004) technology information become significant to assist management dealing with competitive conditions, mainly in environment uncertainty. Organization methods to collect, process, and disclose information are necessary to be well managed while the growth of disclosure requirements push them to disclose their precious information which may create their competitive disadvantages (Clinch & Verrecchia, 1997; Hooshyar & Boghosian, 2015).

Theory of human motivation known as Self-Determination Theory developed by Deci and Ryan (1985) provides a platform study of organizational positive outcomes. Employees' performance is not only affected by individual levels, such as personality, but also by organizational levels, such as human resource practices and organizational climate. The strength of human resource management system showed that in organizational level, the relation between positive managerial goals and organizational climate resulted on positive individual attitudes and behaviors (Bowen & Ostroff, 2004; Liao & Chuang, 2004; Gagné & Vansteenkiste, 2013).

This paper is one of the studies which is adding the organizational factors and its implications. The hypotheses are validated empirically using data from college system survey. Firstly, this research is addressed to analyze the system used as an impact of organizational factors. In addition, it also identifies how the perceptual measurement of organizational factors moderates the interaction between system usage and organization performance.

Literature Review

Organizational Factors

The goals achievement of system implementation is influenced by the successful attainment of system elements. One main element is the end-users. Users can be managed in many ways, such as authority definitions, hierarchy controls, policies, and procedures. Focused on the system implementation, organizational factors become a foundation for end-users management which is expected to increase the system utility.

On the context of personal computer (PC) use, specifically for direct effect examination, facilitating condition become a key factor which can drive system utilization. Venkatesh et al. (2003) posited that there are three direct determinants of intention to use (performance expectancy, effort expectancy, and social influence) and two direct determinants of usage behavior (intention and facilitating conditions). Facilitating conditions are referred to the organization's support included technical service and infrastructure availability resulting in the ease of system usage and barriers reduction (Gu, Lee, & Suh, 2009; Borraz-mora, Bordonaba-juste, & Polo-redondo, 2017).

The construct of facilitating conditions creates two dimensions which are resource factors and usage constraints. The absence of facilitating resources reduce the system usage and the system constraints reflect the barriers (Hossain, Chan, & Ahmed, 2017; Taylor & Todd, 1995; Thompson, Higgins, & Howell, 1991). The Institutional theory argues that the conformity of environment pressure enhances the long-term sustainability. Furthermore, compatibility appeared as a significant determinant of perceived usefulness was counted as an organization's support to encourage the system utilization (Chau & Hu, 2001). A healthy relationship is built to develop revalued institutional pressure as an opportunity and not as a threat. It is converted into positive environmental activities resulted in the pro-active encouragement of employees performance (Colwell & Joshi, 2013).

The accomplishment of organizational objectives depends on individual's eager to commit. Motivation Theory (Kanfer, 1990) divided the driver of human behavior into two categories: intrinsic and extrinsic motivations. Intrinsic motivation is encouraged by the direct values within the work itself. It is useful to solve multiple task problem, to assist in tasks that require creativity, and to enable knowledge transfer (Osterloh & Frey, 2000; Paulin & Suneson, 2012). Extrinsic motivation's role is to satisfy indirect needs. Promising financial rewards as incentives is one of the representative motives to provide individual satisfaction from the immediate impact of individual works.

Gelderman (1998) also found that user satisfaction had a significant correlation with organizational performance. The incentive payouts have to be in line whether it is not being too low to motivate employees and not being too high for employees to afford (Gerhart, Minkoff, & Olsen, 1995; Jeon, Kim, & Koh, 2011). Incentives significantly increased the end-users participation. Lossin et al. (2016) showed that incentives improve the activity on system utility and the effectiveness of monetary incentives is not always higher than non-monetary incentives. As the primary, its impact on the use of system information may exist.

H1a: Facilitating conditions have a positive effect on system usage.
H1b: Institutional pressures have a positive effect on system usage.
H1c: Incentives have a positive effect on system usage.

System Usage

The management focuses on the limitations of the existing system to fulfill the organization's strategic direction. In term of business strategic management, the basic premise, organization performance can be predicted by the effectiveness of the information technology usage. It also enhances and supports their main capabilities. The management has to review their business process and define the lack of their system thus they can reduce the repetitive process, improve their existing system or add on some new modules to keep the organization growth (Feldman & Chapman, 2015).

The adoption of enterprise resource planning leads an organization to reach the peak of performance. The integrated system escalates the entity productivity and profitability (Bharadwaj, 2000; Ravichandran, 2000; Andreas & Jacqueline, 2004). Moreover, the evidence of its the contribution to the organization has been proven (Turel, 2017; Brown, Gatian, & Hicks, 1995; Floyd & Wooldridge, 1990).

Prior studies found that information system provides enormous variants of benefits for the organization including the task quality, time efficiency, staff productivity, improvement of decision-making and competitive advantages (Ghobakhloo & Tang, 2015; Choi, Kang, & Moon, 2015).

H2: System usage has a positive effect on net benefits.

The organizational factors become critical to build the user's commitment. Every phase of new technology implementation push the managers to notice that organizational factors would support knowledge

sharing activities instead of focus on the intention-behavior of system usage (Hoong, 2015). Information technology without the encouragement from management may not create the organization's value. The management has to establish and maintain strategic directions and set the priority activities (Luftman, Papp, & Brier, 1999).

H3a: System usage has a positive effect on net benefits mediated by facilitating conditions.
H3b: System usage has a positive effect on net benefits mediated by institutional pressure.
H3c: System usage has a positive effect on net benefits mediated by incentives.

Research Method

The empirical analysis of this study based on the concept of utilization model (Thompson, Higgins, & Howell, 1991) and the modified technology acceptance model (Fauzi, 2016). The first model analyzes the effect of facilitating condition, institutional pressure, and incentive to system usage. Next model would assess the impact of organizational factors and system usage on the organization performance. In addition, this study also constructs the last model to find out the moderation effect of organizational factors. We estimate these models using the following regression models:

$$SU = \beta_0 + \beta_1 FC + \beta_2 IP + \beta_3 IN + \varepsilon \quad (1)$$

$$NB = \beta_0 + \beta_1 SU + \beta_2 FC + \beta_3 IP + \beta_4 IN + \varepsilon \quad (2)$$

$$NB = \beta_0 + \beta_1 SU + \beta_2 FC + \beta_3 IP + \beta_4 IN + \beta_5 SU^{*} FC + \beta_6 SU^{*} IP + \beta_7 SU^{*} IN + \varepsilon \quad (3)$$

The measurement of System Usage (SU) was the end-users actual usage of college system. The organizational factors which adapted from Thompson, Higgins, and Howell (1991) and Fauzi (2016) was constructed by Facilitating Condition (FC), Institutional Pressure (IP), and Incentives (IN). This study's dependent variable was firm performance that proxies by Net Benefits (NB) adapted from Model of Information System Successful (Delone & McLean, 2003). The variable constructs passed their validity and reliability checks in a pilot test. The hypotheses were tested with regression models.

Instrument Construction

The study measured five constructs including system usage, facilitating condition, institutional pressure, incentives, and net benefits. These constructs were measured using the multiple-item scale which drawn from measurement in information system research based on five-point different scale. All scale items used the five-point Likert scale implied between "strongly disagree" and "strongly agree". Table 1 contains operational definitions and the source of construct measurements.

College system usage defined as the actual use of college system by the end-users which was measured using two items adapted from Delone and McLean (2003) in Model of Information Systems Success. These two items measure the level of utility frequency of use and the perceived ease of the college system use.

Table 1. Measurement of Constructs

Construct	Operational Definition	How Measured
System Usage	The actual usage of college system by the end-users	Adapted from DeLone and McLean (2003) Model of Information Systems Success
Net Benefits	End-user's perception of the expected benefits of college system use	
Facilitating Conditions	The degree of individual believe that the organization exists to support the system use	Adapted from (Thompson, Higgins, & Howell, 1991) The Conceptual Model of Utilization
Institutional Pressure	End-user's perception of the encouragement exerted by organizational as constraints to ensure the conformity.	Adapted from (Fauzi, 2016) The Modified TAM
Incentives	End-user's perception of extrinsic motivation	

The second construct was net benefits which focused on the advantages that college may gain from their system. Facilitating condition was operationalized from Thompson, Higgins, & Howell (1991) as technical support for personal computer use which was answered by respondent as their level of agreement about information technology assistance and guidance. The institutional pressure and incentives were adapted from

Fauzi (2016) that contain the end-users perception about the effort of their organization to ensure the system usage as pressure and motivation.

Sample Data

Empirical data of this study was collected from the end-users in colleges through online questionnaires and physical delivery questionnaires. The online survey has more benefits than traditional paper-based surveys, such as lower costs, faster responses, wide geographically sample (Tan & Teo, 2000). However, this study also sent the physical survey to several rural areas in Indonesia which may have inadequate internet services. The total amount of questionnaires were sent to 6 types of college in Indonesia (academy, polytechnic, high school, institute, university, and community college) was 1,250 questionnaires. The majority of college's system users who became respondents are lecturers in 34 provinces in Indonesia. The sample consisted of end-users from 250 colleges that randomly selected from over 4,503 colleges in Indonesia including 381 public colleges and 4,122 private colleges. The sample portion of the population needed to infer or describe the population was calculated using the Krejcie and Morgan's formula (1970) with the tolerance limit of 5% and generated 250 colleges.

Result and Discussion

The group of respondents with total 543 participants consisting of 7.55% end-users from academies, 15.10% end-users from polytechnics, 13.81% end-users from high schools, 6.89% end-users from institutes, 57.46% end-users from universities, and 0.18% end-users from community colleges. Sample statistics and respondent demography are shown in Table 2.

Table 2. Sample Size and Diversification Demographics

College	Number of Observations	Percentage
Academy	41	7.55%
Polytechnic	82	15.10%
High School	75	13.81%
Institutes	32	6.89%
University	312	57.46%
Community College	1	0.18%
Total	**543**	

Construct validity for the measurements scales (system usage, facilitating condition, institutional pressure, incentive, and net benefits) were assessed by Breusch–Pagan (Baum & Schaffer, 2003). Table 3 presents the scale properties and correlations among all of variables in this study. Composite reliabilities of constructs ranged between 0.79 and 0.84 (see table 3). The correlation matrix in the table indicates that the largest squared correlation between any pair constructs was 0.71 which was net benefits with system usage. Thus, there is no multicollinearity problem.

Table 3. Scale Properties and Correlations

Variable	Mean	s.d.	Reliability	NB	SU	FC	IP	IN
NB	24.76	3.74	0.80	1.00				
SU	8.08	1.53	0.81	0.71	1.00			
FC	12.10	1.84	0.79	0.62	0.57	1.00		
IP	22.17	3.63	0.80	0.46	0.47	0.58	1.00	
IN	10.84	2.34	0.84	0.34	0.33	0.45	0.60	1.00

Legends: NB = Net Benefits, SU = System Usage, FC = Facilitating Condition, IP = Institutional Pressure, IN = Incentives

The hypothesis disclosed in this research were tested into different stages. The first model was used as direct effect analysis of facilitating condition, institutional pressure, and incentives to system usage. The second model added system usage to complete the direct effect model to net benefits and the last model used the organizational factors as moderating variables. Table 4 shows the results of the regression analysis that was

presented in a hierarchical structure to better depict the variance explained. The results in this table show all models, direct effect and moderating effect model.

Model 1 which contains the organizational factors variable include facilitating condition, institutional pressure, and incentives is utilized to test hypothesis 1. The result discloses that there are two variables have the significant relationship with system usage in the predicted direction with $p < .05$ and the change in multiple squared correlation coefficient (R^2) for this model is 36.67% of F = 7.51 (significant at p<.05). Hypothesis 1 proposes linear relationships between organizational factors with system usage. The result supports 2 constructs which are facilitating condition (H1a) and institutional pressure (H1b). These constructs have positive significant impacts on system usage. On the contrary, the incentives did not get a significant result thus hypothesis 1c was rejected. The resulting model is:

$$SU = 2.570 + .309fc + .116ip - .037in + \varepsilon$$

In model 2, system usage was added to complete the direct effect model. Hypothesis 2 suggests that system usage has a positive relation to net benefits. The result, shown in model 2 of table 4, discloses that the statistically significant and positive effect is provided by system usage to increase the net benefits. This model used data that has been transformed into log form, so the data is assumed to be close to normal. Finney (1941) had obtained formulae for efficient estimates of a population from a sample when it is known that the logarithm of an observation is normally distributed. Hypothesis 2 achieved support.

Table 4. Results of Models Analysis

Independent Variable	Model 1	Model 2	Model 3
Facilitating Condition	.309**	.255**	370.8**
Institutional Pressure	.116**	.102**	-580.6**
Incentives	-.037	.009	193.0
System Usage		.459**	-16.67
System Usage x Facilitating Condition			-.370.6**
System Usage x Institutional Pressure			580.7**
System Usage x Incentives			-193.0
R^2	.367	.575	.578
F	7.51**	13.32**	1.18**

Dependent Variable: Model 1 = System Usage (SU), Model 2 and 3 = Net Benefits (NB), ** *p < .05*

The result shows that by adding system usage in the model 2, the predictor variables can increase the R^2 to 0.575. Independent variables are able to explain the variance of system used for 49.66%, the rest is explained by another variable outside the model. Thus, the model resulted in the statistical calculation is

$$Lognb = 1.293 + .495logsu + .254logfc + .102logip + .008login + \varepsilon$$

The last model in table 4 shows the moderating effect of organizational factors on net benefits. Hypothesis 3 suggests that there are positive interactions between organizational factors and system usage to net benefits. Model 3 provided R^2 of .578 ($p < .05$). Independent variables are able to explain the variance of net benefits for 57.8% and the 43.2% is explained by another variable. The statistics results show that there are two constructs of organizational factors which have significant interactions with system usage to net benefits including facilitating condition (H3a) and institutional pressure (H3b). Even though the facilitating condition added negative effect on the relationship. The other ones, incentives have no significant interactions with system usage to net benefits. Thus, these results did not support hypothesis 3a and 3c. The model is

$$\begin{aligned} lognb = 434.5 - 16.67logsu + 370.88logfc - 580.67logip + 193.01login \\ - 370.63logsuxfc + 580.76logsuxip - 193.0logsuxin + \varepsilon \end{aligned}$$

The results of this research are significant for several hypotheses. Firstly, the arguments of the organizational factors' impacts regarding on the importance of how an organization manages their human capital were proven. Facilitating conditions which refer to perceptions of environmental factors to support the system utility have a positive influence on system usage. It supports the previous studies (Hong & Tam, 2006; Wills, El-

Gayar, & Bennet, 2008; Venkatesh et al., 2008). Bhattacherjee (1998) examined the control structure in intra-organizational information technology usage disclosed that the organizational pressure, such as monitoring significantly increased the technology usage. On the other hand, incentives as extrinsic motivation failed to improve the actual use of college information system. Even though it interacted with system usage, it still cannot raise the organizational performance. This construct failed to be supported in both, direct and moderating models.

These research findings according to the positive relation of system usage to net benefit is consistent with the proposed model of Information System Success (Delone & McLean, 2003). We proved that the system usage positively related to the net benefits for colleges. This finding suggests that the successful model of system implementation can create net benefits in terms of financial and operational performance, especially in emerging countries. Ghobakhloo and Tang (2015) also confirmed that system usage is positively related to the organization's performance.

This study provided empirical supports of direct determinants which constructed in the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003). The effect of facilitating conditions was not able to increase the end-users' experience with technology. However, the previous study demonstrated that the moderating effect of facilitating conditions has a positive influence on the relationship between the intention and the actual system usage. As the practical arrangements for technology acceptance, the application of prior theories vary widely and can be used in assessing the environment condition (Hossain, Chan, & Ahmed, 2017; Fădor, 2014).

The research found that the interaction of institutional pressure and system usage which is positively related to the system usage supports the previous studies of Hoong (2015). We found that the direct effect of institutional pressure also had a significant effect on system usage. Moreover, when the management set the expected value to be realized and the policies of the system usage, the relationship between the information technology functions and the business objectives can be improved (Luftman, Papp, & Brier, 1999). This research disclosed the evidence that institutional pressure improves the interaction between system usage and organizational performance. Moreover, it also leads the end-users activity using the organization system.

As expected, the interaction between incentives and system usage has a positive effect on organization performance. According to the prior work of Savaya, Monnickendam, and Waysman (2006), the use of incentives increased the system utilization to achieve many different purposes categories. The actual use was higher for items that were rewarded compared to the others that were not. It is also providing support for the Principal-Agent Model (Bhattacherjee, 1998) that incentives level is related to the intensive frequency of information technology utility. Lossin et al. (2016) described the concept of information system implementation to create sustainability usage. In contrary, this research found that incentives have a negative and no significant effect. The results unable to support this view, the users' commitment to utilizing system may be effectively motivated through several kinds of incentives method resulted in the distinctive contribution to organization objectives.

Conclusion

The results of this study indicated that managers have to be proactive to motivate the end-users by designing better organizational factors including facilitating conditions and also controlling them with institutional pressure. In term of practical implications, the system developers should ensure the steady infrastructure that encourages users to utilize their system and also have to address the potential barriers of the system usage. The management should define what kind of motivation which can effectively increase the system usage. Furthermore, valuable non-monetary incentives that appeal to the intrinsic motivations of end-users which proven by previous studies may increase end-users activity according to system usage at the same level of financial incentives. Human capital was found as a critical key in system implementation. Thus, the organization has to encourage their end-users to utilize the system to achieve the organization's goals.

This research has several limitations. First, this study constructs organizational factors in the form of facilitating conditions, institutional pressure, and incentives which tend to limit on their every specific causality. Bhattacherjee (1998) noted that incentives were divided into outcome-based incentives and behavior-based incentives. Future research may attempt to improve the constructs of organizational factors thus explain more detail about their impact on system usage and firm performance. The moderating effect of facilitating condition that has been proved which had interaction with system usage indicated that the existence of organization support affects the system usage and firm performance. In contrary, the barriers of system usage proxies by customization that allow the users to modify features may create feasible privacy, business strategy, and security issues (Cooke et al., 2012; Taylor & Todd, 1995). Therefore, the organization has to define the balance features of a system to avoid the problems. These issues can be analyzed to compare the impact of the benefit and the risk of the system infrastructure design. This study also has a limitation in the classification of institutional pressure.

The pressure may have different characteristic between public college and private college. Finally, future research may attempt to differ the distinctive nature of institutional pressure.

References

Aldrich, H. E., & Whetten, D. A. (1981). Organization sets, action sets, and networks: making the most of simplicity. In P. Nystrom, & W. H. Starbuck (Eds.), *Handbook of Organizational Design* (pp. 385–408). New York: Oxford University Press.

Andreas, I., & Jacqueline, L. (2004). Firm performance effects in relation to the implementation and use of enterprise resource planning system. *Journal of Information Systems, 18* (Fall), 79–105.

Baum, C., & Schaffer, M. E. (2003). Instrumental variables and GMM: estimation and testing. *The Stata Journal, 3* (1), 1–31.

Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm. *MIS Quarterly, 24* (1), 169–196.

Bhattacherjee. (1998). Managerial influences on intraorganizational information technology use : a principal-agent model. *Decision Sciences, 29* (1), 139–162.

Borraz-mora, J., Bordonaba-juste, V., & Polo-redondo, Y. (2017). Functional barriers to the adoption of electronic banking the moderating effect of gender. *Revista de Economía Aplicada*, XXV, 87–108.

Bowen, D. E., & Ostroff, C. (2004). Understanding HRM-firm performance linkages : the role of the ' strength ' of the HRM system. *The Academy of Management Journal, 29* (2), 203–221.

Brown, R. M., Gatian, A. W., & Hicks, J. O. (1995). Strategic information systems and financial performance. *Journal of Management Information Systems, 11* (4), 215–248.

Brynjolfsson, E., & Hitt, L. M. (1998). Beyond the productivity paradox. *Communication of The ACM, 41* (8), 49–55.

Chau, P. Y. K., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals : a model comparison appro. *Decision Sciences, 32* (4), 699-719.

Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (2014). IT capability and organizational performance: the roles of business process agility and environmental factors. *European Journal of Information Systems, 23* (3), 326–342. doi:10.1057/ejis.2013.4.

Choi, S., Kang, S., & Moon, T. (2015). Realistic performing art information service : based on IS success model. *Indian Journal of Science and Technology, 8* (25), 1-7. doi:10.17485/ijst/2015/v8i25/.

Clinch, G., & Verrecchia, R. E. (1997). Competitive disadvantage and discretionary disclosure in industries. *Australian Journal of Management, 22* (2), 125–138.

Colwell, S. R., & Joshi, A. W. (2013). Corporate ecological responsiveness: antecedent effects of institutional pressure and top management commitment and their impact on organizational performance. *Business Strategy and the Environment, 22* (2), 73-91. doi:10.1002/bse.732.

Cooke, E., Milliron, T., Ballai, A., Nowack, M. D., & Hagemann, R. C. (2012). System and method for triggering on platform usage, issued 2012. From https://patents.google.com/patent/US8938053.

Curtis, S., & Wright, D. (2001). Retaining employees - the fast track to commitment. *Management Research News, 24* (8), 59–64.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: self-determination in personality. *Journal of Research in Personality*, 19, 109–134.

Delone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success : a ten-year update. *Journal of Management Information Systems*, 19, 9–31.

Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European Management Journal, 14* (4), 356–364.

Eldenburg, L., Soderstrom, N., Willis, V., & Wu, A. (2010). Behavioral changes following the collaborative

development of an accounting information system. *Accounting, Organizations and Society*, *35* (2), 222–237. doi:10.1016/j.aos.2009.07.005.

Făd or, G. L. (2014). The emergence and development of the technology acceptance model (TAM). In *Marketing-from Information to Decision*, 149–161.

Fauzi. (2016). Modified TAM with inducing the reinforcement institutional theory (facilitating conditions, institutional enforcement, and incentive) toward SIPKD' S individual users performance.

Feldman, G., & Chapman, C. (2015). Enterprise systems upgrade drivers : a technological, organisational and environmental perspective. In *Pacific Asia Conference on Information Systems (PACIS) 2015*.

Finney, D. J. (1941). On the distribution of a variate whose logarithm is normally distributed. *Journal of Royal Statistical Society*, *7* (2), 155–161.

Floyd, S. W., & Wooldridge, B. (1990). Path analysis of the relationship between competitive strategy, information technology, and financial performance. *Journal of Management Information Systems*, *7* (1), 47–64.

Gagné, M., & Vansteenkiste, M. (2013). Self-determination theory's contribution to positive organizational psychology. in Arnold B. Bakker (ed.) *Advances in Positive Organizational Psychology* (pp.61-82) Emerald Group Publishing Limited.

Galbraith, J. R. (1974). Organization design: an information processing view. *Informs*, *4* (3), 28–36.

Gelderman, M. (1998). The relation between user satisfaction, usage of information systems and performance. *Information & Management*, 34, 11–18.

Gerhart, B. A., Minkoff, H. B., & Olsen, R. N. (1995). Employee compensation : theory, practice, and evidence. *CAHRS Working Paper Series*.

Ghobakhloo, M., & Tang, S. H. (2015). Information system success among manufacturing SMEs : case of developing countries. *Information Technology for Development*, *21* (4), 573–600.

Gu, J-C., Lee, S-C., & Suh, Y-H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, 36, 11605–11616. doi:10.1016/j.eswa.2009.03.024.

Hong, S-J, & Tam, K. Y. (2006). Understanding the adoption of multipurpose information appliances: the case of mobile. *Information Systems Research*, *17* (2), 162–179. doi:10.1287/isre.l060.0088.

Hoong, A. L. S. (2015). Role of affect and task category-knowledge sharing tools fit on behavioural intention to use ks tools among knowledge workers. Doctoral dissertation, Sunway University, Selangor-Malaysia.

Hooshyar, M., & Boghosian, A. (2015). The effect of conservatism on the reliability of information and timeliness of disclosure among the listed companies in Tehran stock exchange. *European Journal of Natural and Social Sciences*, *4* (1), 1747–1760.

Hossain, M. A., Chan, C., & Ahmed, J. U. (2017). Predicting user acceptance and continuance behaviour towards location-based services : the moderating effect of facilitating conditions on behavioural intention and actual use. *Australasian Journal of Information Systems*, 21, 1–22.

Jeon, S., Kim, Y-G., & Koh, J. (2011). An integrative model for knowledge sharing in an integrative model for knowledge sharing in communities-of-practice. *Journal of Knowledge Management*, *15* (2), 251-269. doi:10.1108/13673271111119682.

Kanfer, R. (1990). Motivation theory and industrial and organizational psychology. In In M. D. Dunnette & L. M. Hough (Eds.) *Handbook of Industrial and Organizational Psychology* (pp. 75–170).

Kobelsky, K., Hunter, S., & Richardson, V. J. (2008). Information technology, contextual factors and the volatility of firm performance. *International Journal of Accounting Information Systems*, 9, 154–174. doi:10.1016/j.accinf.2008.02.002.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607–610.

Liao, H., & Chuang, A. (2004). A multilevel investigation of factors influencing employee service performance

and customer outcomes. *The Academy of Management Journal 47* (1), 41–58.

Lossin, F., Kozlovskiy, I., Sodenkamp, M., & Staake, T. (2016). Incentives to go green: an empirical investiga-tion of monetary and symbolic rewards to mo-tivate energy savings. In *European Conference on Information Systems (ECIS) 2016*.

Luftman, J., Papp, R., & Brier, T. (1999). Enablers and inhibitors of business-IT alignment. *Communications of the Association for Information Systems*, 1. From http://aisel.aisnet.org/cais/vol1/iss1/11.

Osterloh, M., & Frey, B. S. (2000). Motivation, knowledge transfer, and organizational forms. *Organization Science, 11* (5), 538–550.

Paulin, D., & Suneson, K. (2012). Knowledge transfer, knowledge sharing, and knowledge barriers – three blurry terms in KM. *The Electronic Journal of Knowledge Management*, *10* (1), 81–91.

Ravichandran, T. (2000). Strategic implications of information systems resources and capabilities : a competence-based model. In *Americas Conference on Information Systems (AMCIS) 2000*.

Riketta, M. (2002). Attitudinal organizational commitment and job performance, a meta-analysis. *Journal of Organizational Behavior, 23* (3), 257–266. doi:10.1002/job.141.

Savaya, R., Monnickendam, M., & Waysman, M. (2006). Extent and type of worker utilization of an integrated information system in a human services agency. *Evaluation and Program Planning*, 29, 209–216. doi:10.1016/j.evalprogplan.2006.03.001.

Tan, M., & Teo, T. S. (2000). Factors influencing the adoption of internet banking. *Journal of the Association for Information Systems, 1* (5).

Tanriverdi, H., & Ruefli, T. W. (2004). The role of information technology in risk/return relations. *Journal of Association for Information Systems, 5* (11), 421–447.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage : a test of competing models. *Information Systems Research*, *6* (2), 144–176.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing : toward a conceptual model of utilization. *MIS Quarterly, 15* (1), 125–143.

Turel, O. (2017). Board-level information technology governance effects on organizational performance : the roles of strategic alignment and authoritarian governance style. *Information Systems Management*, *34* (2), 117–136.

Venkatesh, V., Brown, S. A., Maruping, L. M., & Bala, H. (2008). Predicting different conceptualizations of system use: the competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly, 32* (3) 483–502.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly, 27* (3), 425–478.

Wills, M. J., El-Gayar, O. F., & Bennet, D. (2008). Examining healthcare professionals' acceptance of electronic medical records using UTAUT. *Issues in Information Systems, IX* (2), 396–401.