



# Performance management practices, information and communication technology (ICT) adoption and managed performance

James R.K. Kagaari

*Department of Psychology, Kyambogo University, Kampala, Uganda, and*

John C. Munene and Joseph Mpeera Ntayi

*Makerere University Business School, Nakawa, Uganda*

## Abstract

**Purpose** – The purpose of this paper is to demonstrate the need for managers of public universities to pay attention to performance management practices and information communication technology (ICT) adoption in order to achieve successful managed performance.

**Design/methodology/approach** – Using a disproportionate stratified purposive approach, a sample of 900 employees was drawn from four public universities in Uganda.

**Findings** – The results revealed that performance management practices that are vested in agency relations and goal setting with ICT adoption are necessary in the achievement of managed performance in public universities.

**Practical implications** – Building a positive employer-employee relationship and involving employees in setting goals and targets is crucial for successful management of organisations. ICT adoption will further facilitate service quality, service delivery and cost reduction.

**Originality/value** – This paper calls for a new approach to managing employees in public universities in developing countries and Uganda in particular.

**Keywords** Performance management, Universities, Uganda

**Paper type** Research paper

## Introduction

According to Armstrong (2000), performance management is a means of getting better results from the whole organisation or teams or individuals within it, by understanding and managing performance within an agreed framework of planned goals, standards and competence requirements. Performance management could be validated and tested in an emerging country's context of growth and development for a developing country like Uganda. Uganda's context of growth and development could be more dynamic and completely different from a developed country's context. For this study the context was in terms of public universities in Uganda. Public Universities of Uganda are facing challenges such as reduced funding from the government, restructuring, downsizing and reengineering amidst ever increasing demand for University education and stakeholders demanding for quality services, service delivery and cost reduction.

In such a hyper changing educational environment, there is need for developing countries and public universities of Uganda in particular to adopt information and

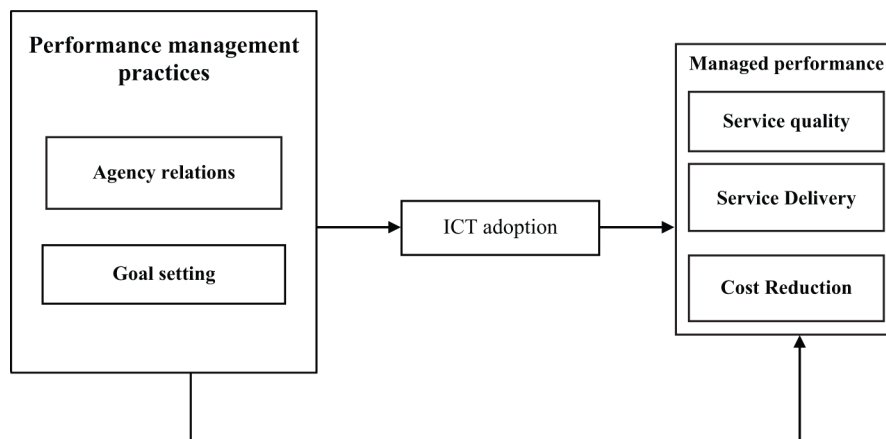


communication technology (ICT) to meet stakeholder needs. According to Nomdo (2004), the use of ICT in educational settings has become an important area of enquiry. Tusubira *et al.* (2009) asserted that ICT is not merely technology but about people networks at the intellectual, functional and operational level to: support student-centred learning generating twenty-first century human resource; enhance effective and efficient student and staff research both locally and internationally through collaboration; facilitate academic and administrative management processes; and also enable cheap, efficient timely communication.

Consequently, public universities in Uganda have to find money and invest in the use of ICT for learning, teaching and research (Kasozi, 2005). However, ICT being completely new in Uganda is posing a serious challenge to users and providers of services in public universities. Most importantly, universities cannot afford the costs of acquiring and updating of software and hardware, developing infrastructure and ensure regular maintenance of ICT equipment. Also, inability to attract and retain competent ICT staff in addition to other institutional factors such as organisational politics hinders human resource development. Human resource is crucial for successful performance of these universities. Public universities still have to outsource for ICT expertise in certain areas of operations. This further undermines the adoption of ICT in public universities of Uganda and impacts on the growth and development of the country. This study was set to establish whether performance management practices vested in agency (Jensen and Meckling, 1976) and goal-setting (Locke, 1968; Locke and Latham, 1990) theories with adoption of ICT explained successful attainment of managed performance in public universities of Uganda (see Figure 1). The conceptual framework (see Figure 1) proceeds with a review of the literature. This is followed by research methodology, results, discussion and conclusions in this order.

### Performance management practices, ICT adoption and managed performance

Performance management is about directing and supporting employees to work as effectively and efficiently as possible in line with the needs of the organisation (Walters, 1995). This requires adoption of information and communication technology



**Figure 1.**  
The interrelationships  
among the study variables

(see Figure 1). In this study, public universities of Uganda have to recruit competent employees and continually ensure human resource development as new technologies are adopted for delivery of fast and cost effective quality services. According to Tusbira *et al.* (2009) these universities still face challenges of incorporating email and Internet/intranet services. Further, management, control and maintenance of ICT resources owned by the units responsible for the main systems and databases are either lacking or not networked.

Such resources include centrally located servers (for databases and software) for the Academic Records Information System, the Library Information System, the Finance Information System and the Human Resource Information system.

Basing on the agency theory perspective as an aspect of performance management practice, Karake (1995) argued that using information technology as a means of control; managers could protect their own interests as well as those interests of the stockholders to successfully manage performance. Control is the purpose of agency and the basis for agency theory, and organisational control is one of the most fundamental and most important areas of management activities. Control means ensuring that the principal's actions and work are performed by some people, and information and communication technology strengthens managers' ability to control by communicating information rapidly across distances and utilizing computational routines (Karake, 1995). For instance, Lewis *et al.* (2005) found that while the introduction of networked ICTs into the organisational setting is meant to empower workers, it also increases the ability for organisations to exercise centralised control and surveillance (DiMaggio *et al.*, 2001). Karake (1995) also found and confirmed that large companies with a larger number of outside directors on the board use the advantage of information technology as a mechanism of monitoring managers. This reduces agency costs that arise from the problem of separation of ownership (risk bearing) and control (management) in an organisation.

Furthermore, Brynjolfsson and Mendelson (1993) established that ICT utilisation has had a significant impact on changes occurring in society, the economy and organisations in particular. Organisations are social entities that thrive on good working relationship between the employers and employees.

Agency relationships, the focus of this study are derived from the agency theory perspective that exist when one party (the principal) depends on the actions of another (the agent) to achieve the aims of the firm (Jensen and Meckling, 1976). In such a relationship, the doer is known as the agent, whereas the affected party is called the principal. There is reason to believe that the agent will not always act in the best interest of the principal given that the agent is a utility maximizer who is granted decision making authority and that there are asymmetric levels of information between the two parties (Berle and Means, 1932). Also, under the agency perspective, the owners put up the capital necessary to fund the organisation. In return, they receive the residual claims, or profits, that remain after all other claimants are paid. However, in public universities, there are no residual claims to be paid out and no owners expecting to earn a profit. Within these universities, any conceivable agency relationship between employers and employees is clouded (Olson, 2000). Furthermore, without residual claims or stock, there is no need for management to worry about the organisation being bought or sold in the marketplace. These conditions suggest that managers in public universities have increased opportunity to pursue self-interest (Dyl *et al.*, 1996). This

---

opportunity is clearly established in Mamdani (2007) who demonstrated how the central administration in one of the public universities under study lost control of its finances to the deans and directors of faculties.

These deans and directors were able to pay themselves increments in top up allowances without the authorization of the central administration. Such a situation has particular implications for attainment of managed performance in public universities and how to report on that performance (Myners, 1998).

Wolf's (1999) study of the service sector in Uganda, Kenya and Tanzania found that higher levels of computerization, that is, the office, computing and accounting equipment made available to employees have led to lower productivity. This finding could be explained by the high reliance of the service sector on the quality of the labour input (Aickelin *et al.*, 2008). For public universities of Uganda do not pay open market rate salaries and wages to compete with private sector in attracting and retaining competent employees, a problem that remains unresolved.

Rheingold (1993) argued that ICT adoption in performance management is used to facilitate human systems to form webs of personal relationships in cyberspace as well as increase information circulation to enable employees achieve managed performance. For instance, studies on marketing and innovation (Vilaseca-Requena *et al.*, 2007) showed that ICT use not only enables the development of co-operative relationships with agents of the environment, it also allows agents' full integration in the processes of innovation by the formation of flexible working groups with a high degree of communication between its members. This is crucial for quality, service and cost consideration and attainment of managed performance. For instance, using ICTs, Dell virtually integrated their complete value chain with customers, distributors and suppliers. Dell is therefore in a position to reap a lot of production efficiency such as improving speed and flexibility in the global IT industry (Joan, 1998). This underlies the European Commission Report on ICT (European Commission, 2008) that our innovation performance is crucially dependent on strengthening investment in and the use of new technologies, particularly ICTs, by both the private and public sectors with information and communication technology providing the backbone for the knowledge economy. From the reviewed literature, it was hypothesised that:

*H1.* Performance management practices have a positive relationship with information and communication technology adoption.

Arnal *et al.* (2001) found that the improved flow of information between managers and workers, as a consequence of ICT adoption, has enabled innovative practices such as decentralisation of decision making and teamwork adoption.

Clarke and Clegg (2000) added that information and communication technology has facilitated the globalization of production and is transforming concepts of time and space. Furthermore, ICT technology is well targeted and deployed in order to achieve strategic goals (Zahra *et al.*, 2006). For instance, Busi and Bititci (2006) found that ICT has increased the amount of information available to individuals and their ability to share such information far beyond everybody's expectations. Rheingold (1993) established that increased use of ICT in organisations has led to improved efficiency and effectiveness. This means that ICT adoption is imperative for a nation's growth and development. This study sought to establish that ICT adoption as one of the set goals for public universities of Uganda facilitated performance management practices

to achieve managed performance. From the reviewed literature, it was hypothesised that:

*H2.* Information and communication technology has a positive relationship with managed performance.

Managers of organisations and those of public universities in Uganda in particular have to continuously scan the environment, be innovative, set and implement their goals appropriately in order to successfully manage performance.

The goal-setting idea that underlies much of motivation theory (Locke, 1978) pervades the recent practice in performance management (Punnett *et al.*, 2007). Miner (2003) conducted an evaluation basing on assessment of organisational behaviour (OB) scholars and rated goal setting theory first in importance among 73 management theories despite its longevity. According to Locke and Latham (2002), goals are outcomes to attain standards for judging one's accomplishments. Locke and Latham (2005) cited in Smith and Hitt (2005, pp. 128-47) found that people are more satisfied when they attain their goals or make meaningful progress towards them than when they fail, make little or no progress. Also, Frese (2005) cited in Smith and Hitt (2005, p. 102) found that proactive goal setting maximizes the positive effect of goals by developing specific, time-bound, and challenging goals to which participants feel committed. In view of the goal setting theory, Vecchio and Appelbaum (1995) established that improved performance is achieved where managers and employees have agreed on performance goals and expectations (Heskett *et al.*, 1994) coupled with good information flow facilitated by ICT. In addition, Boonstra and Vink (1996) found that information and communication technology (ICT) is a useful tool or system for controlling regulation of the workflow, improving flexibility, service, quality and innovation capacity of an organisation. Furthermore, Gonzalez (2008) found that ICT as a support tool offers the means for improving effectiveness and efficiency in goal setting for coordinating business networks.

According to De Waal (2003), better understanding and implementation of performance management practices requires examining the influence of information and communication technology, particularly on availability and utilisation of ICT such as computers, intranet, fax, and telephones in order to manage performance.

Furthermore, London *et al.* (1997) found that 360-degree feedback with clear information and communication in setting goals facilitated efficiency and effectiveness of work performance. Thomas (1996) had also earlier established that 360-degree feedback coupled with the validity of goal setting as a management approach improved performance. Verbeeten (2008) also found that the definition of clear and measurable goals is positively associated with quantity and quality performance and that the use of incentives is positively associated with quantity performance yet not related to quality performance. An empirical finding (Pollit, 2006) further showed that quantitative performance measures tend to ignore the quality aspect of service delivery since qualitative performance is much more difficult to measure. Verbeeten (2008) further established that the effects of performance management practices in public sector organisations are affected by institutional factors with the results suggesting that the behavioral effects of performance management practices are as important as the economic effects in public sector organisations. According to Latham (2001), there

is need to investigate goal setting procedures and generalization, in the achievement of managed performance (Mitchell, 1997) and that empirical evidence on performance management practices in the public sector is inconclusive (Verbeeten, 2008). This study was set to investigate and explain the need for performance management practices with ICT adoption in public universities of Uganda.

From the literature discussed a hypothesis was predicted that:

*H3.* Performance management practices have a positive relationship with managed performance.

## Research methodology

### *Procedure*

The study is based on survey data collected from employees in public universities in Uganda. According to Cooper and Schindler (2003), surveys allow contact with otherwise inaccessible respondents at relatively low costs. A disproportionate stratified purposive sampling approach was adopted. The questionnaires were distributed and collected by the researcher (see Table I).

Questionnaires were purposively distributed to a selected group of employees identified with the help of administrative officers from the senior-, middle-, and lower levels of management in administration. In selecting employees for participation, effort was made to include people from different hierarchical levels. The selected participants largely consisted of administrative employees and academic staff. A number of call backs to the respondents were made to ensure maximum retrieval of the questionnaires.

To minimize sampling errors, Krejcie and Morgan (1970) produced a table for determining sample size for any population of a defined (finite) size based on this confidence level that does not necessitate any computations to be carried out. Krejcie and Morgan (1970) stated that, using this table, as the population increases the sample size increases at a diminishing rate (plateau) and remains, eventually constant at slightly more than 380 cases. There is little to be gained to warrant the expense and the time limit to sample beyond 380 cases. Alreck and Settle (1995) provided similar evidence. However, Ntoumanis (2001) recommended a ratio of participants to independent variables for a multiple regression to be at least 5:1 and Field (2005) recommended a sample size of at least 200 participants for up to 20 predictors in order to obtain a medium effect. This study met all the conditions with a total of 474 questionnaires returned of which 447 were usable (50 per cent response rate).

Name of university	Age of university	Number of employees	Sample selected	Returned questionnaires
Kyambogo University	6	1,027	300	250
Makerere University	87	2,911	400	134
Mbarara University	20	686	100	40
Gulu University	7	166	100	50
Total		4,774	900	474

**Table I.**  
Study population and sample size

### *Measures*

This was a cross-sectional survey design using a quantitative approach to data collection and analysis. All the constructs were measured using a four-point Likert scale on a scale of (“1 = strongly disagree” to “4 = strongly agree”). The scale is practical and interesting, does not have a midpoint and in that sense forces a choice (Worthen *et al.*, 1999). The four point Likert scale was adopted in anticipation of respondents’ likelihood to score the midpoint. J.C. Munene (Personal communication, July 30, 2008) claimed that this was a common problem in Uganda.

Variable(s) of performance management practices included the agency relations and goal setting. Agency relations were measured using seven items adopted from an instrument developed by Martinez and Kennerley (2005).

For instance, each respondent was asked to indicate his/her opinions for items with an example: “Managers focus their attention on key objectives set by shareholders and regulators”.

Goal setting was measured using 11 items adopted from an instrument developed by Van de Walle (1997). An example of the item being: “I often prepare a work plan for effective performance”.

Information, communication and technology (ICT) adoption characteristics were measured using 20 items adopted from an instrument developed by Worrall (2005). For instance, a respondent was asked to indicate whether “ICT support staffs have a high level of technical competence”.

The variable managed performance that includes quality service, service delivery and cost reduction was measured. Quality service was measured using adopted items from an instrument developed by Hui *et al.* (2003) using 11 items. A respondent was asked to indicate his/her opinion on an item such as: “Employees in this institution have the knowledge to answer the stakeholders’ questions”.

Cost-reduction was measured using three adopted items from an instrument developed by Huang (2001). For instance, a respondent was asked to indicate whether: “Performance is monitored by a control system”.

Service delivery was measured using 11 adopted items from the instrument developed by Parasuraman *et al.* (1988), such as: “I perform the service right the first time”.

Control variables such as sex, marital status, age of respondent, university age, educational level, tenure and previous work experience were included in the analyses (Herrmann and Datta, 2005). University age showed significant results and so was included in further data analysis.

### *Data management and analysis*

Missing values (maximum 2.5 per cent) were replaced using the series means approach in a statistical software package for social scientists (SPSS version 16). With the variance inflation factor at 1.00 and tolerance statistics all well above 0.90, indicated that there was no collinearity within the data showing that the items were distinct for the constructs under measurement (Field, 2005).

Factor analysis was conducted to indicate the extent to which items measure the distinct variables to establish the discriminant validity (Straub, 1989). Field (2005) citing Tabachnick and Fidell (2001) suggested that it is comforting to have at least 300 cases for factor analysis, which this study satisfied. All items that were cross loading

on other components with values exceeding 0.5 were not included in the analysis together with those values had values less than 0.5. McCarthy and Garavan (2007) argued that factor analysis is recognized as “a powerful and indispensable method of construct validation” that “is at the heart of the measurement of psychological constructs”, a major reason for having conducting a factor loading in this study. The zero-order Pearson correlation coefficient was used to examine the relationships between the study variables. Hierarchical regression analysis (HTA) examined the mediation and prediction power of the study variables.

Multiple regression analysis was used to examine the moderating effect and predictive powers of the study variables. Analysis of variance (ANOVA) was used to examine differences between groups for demographic factors and study variables. Using weighted least squares, mean values, and variances of each university on study variables were obtained. Path analysis was conducted to examine the total effect of the mediation variables on predictor variables and the Sobel's (1982) test was used to confirm mediation. All main variables exceeded the minimum reliability coefficient of 0.70 using the Cronbach Alpha.

### *Findings*

The findings showed that of the respondents: 62 per cent were male; 38 per cent were female; 64 per cent had ages below 40 years and 36 per cent above; 66.2 per cent were married; 29.5 per cent were single; 2.2 per cent separated; 0.7 per cent divorced and 1.3 per cent widowed; 45 per cent had a second degree and above; 5.6 per cent had certificates; 13.4 per cent had diplomas; 35.6 per cent had a first degree; 36 per cent had worked in the universities for more than ten years and 64 per cent less; and 74 per cent had worked elsewhere before joining university service whereas 26 per cent had no working experience on joining university employment. The results revealed that the respondents scored high on goal setting ( $M = 2.80$ ,  $SD = 0.45$ ), ICT adoption ( $M = 2.73$ ,  $SD = 0.49$ ) and managed performance ( $M = 2.69$ ,  $SD = 0.52$ ) and low on agency relations ( $M = 2.30$ ,  $SD = 0.60$ ).

The results in Table II reveal that the dimensions that tested the agency relations in the model account for 41 percent.

Dimensions	Agency relations
The performance of university top leaders is regularly monitored	0.68
The compensation of university top leaders is according to their performance	0.60
Policies and procedures of the institution are clearly defined	0.68
The review of the of decisions taken by the university top leaders is done formally by committees or higher management	0.69
University top leaders' performance is regularly reported to all stakeholders	0.69
The reviews of the decisions taken by the university top leaders is comprehensively conducted	0.75
<i>Eigen values</i>	2.87
<i>Percent total variance</i>	40.96
<i>Cumulative percentage</i>	40.96

**Note:** One component had a loading less than 0.5 and was extracted

**Table II.**  
Rotated component  
matrix: agency relations

Dimensions	Indices		
	1 Performance attainment	2 Empowerment	3 Participation
I prefer to work on projects where I can prove my ability to others	0.84		
I enjoy work when others are aware of how well I am doing	0.79		
I prefer to work under conditions that require a high level of ability and talent	0.76		
I am willing to select a challenging work assignment	0.74		
In this institution employees set themselves challenging but achievable goals		0.83	
In this institution employees are committed to their goals		0.69	
In this institution employees believe in their own ability		0.67	
In this institution employees always receive feedback		0.57	
In this institution employees define goals for their own teams			0.77
In this institution employees praise themselves when they do well			0.66
In this institution employees are encouraged to set their own task goals			0.75
<i>Eigen values</i>	2.57	2.09	1.69
<i>Percentage total variance</i>	23.35	18.96	15.38
<i>Cumulative percentage</i>	23.35	42.31	57.70

**Table III.**  
Rotated component matrix: goal setting

The results in Table III reveal that 58 per cent of variance in goal setting is due to performance, empowerment and participation of which 23 per cent is due to performance attainment, 19 per cent is due to empowerment, and 15 per cent is due to participation.

The results in Table IV reveal that 58 per cent of variance in information and communication technology is due to collaboration, capacity building, information and communication technology (ICT) utilisation and technical competence, of which 25 per cent is due to collaboration, 18 per cent is due to technological accumulation, 8 per cent is due to ICT utilisation and 7 per cent is due to technical competence.

The results in Table V reveal that 57 per cent of variance in managed performance is due to service quality, service delivery and cost reduction, of which 30 per cent is due to service quality, 20 due to service delivery, and 7 per cent due to cost reduction.

### Results

A number of statistical tests such as zero-order correlations and regression analysis were carried out to establish the nature of relationships that exist among the dependent and independent variables. In the process of doing so, a number of significant relationships were found. Those relationships uncovered the support and shed more

Dimensions	Indices			
	1 Collaboration	2 Capacity building	3 ICT utilisation	4 Technical competence
ICT support staff are easy to contact when they are needed by the user	0.78			
ICT staff respond quickly to remedy users' problems	0.75			
Good communication exists between those who support and those who use ICT	0.75			
There is high level participation in the planning of new systems and developments	0.68			
ICT support staff understand the users' business	0.67			
Proper training is provided to increase the ICT knowledge and skills base of the users	0.64			
In this institution users of ICT have a good working relationship with other employees	0.51			
The software is up to date		0.88		
The hardware is up to date		0.82		
Senior it management has visionary leadership in the exploitation of technology		0.63		
ICT professionals upgrade themselves continuously to avoid decay		0.57		
There is short lead time for the development of new information systems			0.78	
There is a low downtime in this institution			0.59	
ICT staff should have high level of technical competence				0.83
<i>Eigen values</i>	<i>5.04</i>	<i>3.55</i>	<i>1.52</i>	<i>1.42</i>
<i>Percentage total variance</i>	<i>25.20</i>	<i>17.77</i>	<i>7.61</i>	<i>7.12</i>
<i>Cumulative percentage</i>	<i>25.20</i>	<i>42.96</i>	<i>50.57</i>	<i>57.69</i>

**Table IV.**  
Rotated component  
matrix: information and  
communication  
technology

light on the antecedents of achieving managed performance at public universities. The correlation analyses unearth and describe the strength and direction of the linear relationship between the study variables.

Zero-order correlations shown in Table VI to interpret their size, Cohen *et al.* (2003) criteria was used that for small ( $r > 0.10$ ), medium ( $r > 0.30$ ), and large ( $r > 0.50$ ) effect size.

H1. *Performance management practices have a positive relationship with information and communication technology adoption.*

The Pearson zero-order correlation results in Table VI showed that performance management practices had a positive significant relationship with ICT adoption

Dimensions	1 Service quality	Indices 2 Service delivery	3 Cost reduction
The physical facilities at this institution are visually appealing	0.79		
This institution has modern looking equipment	0.77		
This institution's departments provide their services at the time they promise to do so	0.74		
This institution's departments perform the service right first time	0.72		
This institution's departments insist on error-free records	0.72		
When this institution's staff promises to do something by a certain time, they do so	0.71		
Employees at this institution tell stakeholders exactly when services will be performed	0.68		
Employees in this institution's departments give prompt services to stakeholders	0.66		
When a stakeholder has a problem this institution's staff show a sincere interest in having it solved	0.65		
Employees at this institution appear professionally dressed	0.64		
This institution gives stakeholders individual attention		0.71	
Employees in this institution's departments understand the needs of their stakeholders		0.69	
This institution's departments have the stakeholders' best interests at heart		0.65	
Employees in this institution's departments have the knowledge to answer the stake holder's questions		0.60	
This institution has operating hours convenient to all their stakeholders		0.60	
Employees in this institution's departments are never too busy to respond to stakeholders' requests		0.59	
At this institution competitive power is maintained by cutting costs			0.83
At this institution performance is monitored by a cost control system			0.69
At this institution changes are set lower than those of our competitors			0.65
<i>Eigen values</i>	7.48	4.91	1.84
<i>Percentage total variance</i>	29.91	19.64	7.35
<i>Cumulative percentage</i>	29.91	49.54	56.89

**Table V.**  
Rotated component matrix for managed performance

	Cronbach alpha	M	SD	(1)	(2)	(3)	(4)	(5)	(6)
University age				1.00					
Agency relations	0.81	2.30	0.60	0.14**	1.00				
Goal setting	0.84	2.80	0.45	0.13**	0.18**	1.00			
Performance management	0.93	2.51	0.52	0.03	0.52**	0.28**	1.00		
ICT adoption.	0.91	2.73	0.49	0.18**	0.19**	0.10*	0.21**	1.00	
Managed performance	0.97	2.69	0.52	-0.08*	0.17**	0.09*	0.24**	0.20**	1.00

**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ;  $n = 447$

**Table VI.**  
Zero order correlations: demographic factors, agency relations, goal setting and managed performance

Steps	Variable	Constant	$B$ -stand.	$\beta$ -stand.	$p$ -val.	$t$	Stand. error.	$R^2$	$\Delta R^2$	$F$	Tol.	VIF
1	Dependent = ICT adoption Independent variable = performance management practices	2.25	0.21*	0.19*	0.00	4.10*	0.04	0.04	0.04	16.77*	1.00	1.00
2	Dependent variable = managed performance Independent variable = performance management practices	2.09	0.24*	0.24*	0.00	5.14*	0.05	0.06	0.06	49.52*	1.00	1.00
3	Dependent variable = Managed performance Independent variable = ICT adoption Independent variable = performance management practices	1.70	0.16* 0.20*	0.17* 0.20*	0.00 0.00	3.48* 4.38*	0.05 0.05	0.08 0.08	0.08 0.08	19.60* 19.60*	0.96 0.96	1.04 1.04
4	Dependent = managed performance Independent variable = ICT adoption	2.09	0.20*	0.22*	0.00	4.38	0.05	0.04	0.04	19.19*	1.00	1.00

**Notes:** \* $p < 0.01$ ;  $n = 447$

**Table VII.**  
Multiple regression  
analysis of the major  
constructs

( $r = 0.21, p = 0.00$ ). The regression analysis in Table VII also indicated that 4 per cent of variance in ICT adoption is attributable to performance management practices,  $R^2 = 0.04, [F(1, 445) = 16.77, p = 0.00]$ . This supports *H1*.

*H2. Information and communication technology adoption has a positive relationship with managed performance.*

According to the Pearson zero-order correlation results in Table VI, ICT adoption had a positive significant relationship with managed performance ( $r = 0.20, p = 0.00$ ).

The regression analysis results in Table VII also revealed that 4 per cent of variance in managed performance could be explained by ICT adoption,  $R^2 = 0.04, [F(1, 445) = 19.19, p = 0.00]$ . This supported *H2*.

*H3. Performance managed practices have a positive relationship with managed performance.*

The Pearson zero-order correlations in Table VI, revealed a positive significant relationship between performance management practices with managed performance ( $r = 0.24, p = 0.00$ ). The regression analysis results in Table VII also indicated that 6 per cent of the variance in managed performance was attributable to performance management practices,  $R^2 = 0.06, [F(1, 445) = 49.52, p = 0.00]$ . This supported the suggested *H3* that there is a positive relationship between performance management practices and managed performance.

The hierarchical multiple regression analysis (see Table VIII) was carried to further explore the true nature of the relationships basing on the stated hypotheses. In so doing, there was hope that better prediction of the factors that influence the achievement of successful managed performance would be obtained. In the first model, the university age that was controlled for accounted for 1.0 per cent of variance in managed performance.

In the second model, adding the second block of performance management practice variables (agency relations and goal setting) resulted in 4.4 per cent of variance in managed performance with 3.8 of variance accounted for by components of performance management practices,  $F(3, 443) = 6.825, p = 0.00$ .

Predictor variable	Model 1 $\beta$	Model 2 $\beta$	Model 3 $\beta$
Constant	2.745**	2.188**	1.729**
University age	-0.03	-0.046*	-0.058**
Agency relations		0.151**	0.124**
Goal setting		0.082	0.070
ICT adoption			0.211**
$R^2$	0.006	0.044	0.080
$R^2$ (adj.)	0.004	0.038	0.072
$\Delta R^2$	0.006	0.036	0.036
$F$	$F(1,445) = 2.873$	$F(3, 443) = 6.825^{**}$	$F(4,442) = 9.657^{**}$
$\Delta F$	2.873	8.748**	17.401**

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$ ;  $n = 447$

**Table VIII.**  
Hierarchical regression analysis (dependent variable: managed performance)

The third and overall model indicated that entering information and communication technology adoption,  $F(4, 442) = 9.657, p = 0.00$ , provided the best model fit contributing 3.6 per cent to the total predictive power of 8.0 per cent of variance in managed performance. The findings supported the hypothesis (*H1* and *H2*).

Also, information and communication technology (ICT) adoption was found to have predictive qualities ( $\beta = 0.17, p = 0.00$ ) using Baron and Kenny's (1986) approach in Table VII to establish mediation. This result compared to the zero-order coefficient ( $r = 0.20, p = 0.00$ ) suggested a partial mediation influence of ICT adoption on performance management practices and managed performance.

The path analysis results showed that for: performance management practices, ICT adoption and managed performance path, the total effect was 0.280, Sobel test confirmed the partial mediation ( $t = 3.12, p = 0.00$ ); Agency relations, ICT adoption and managed performance path, the total effect was 0.182, Sobel test confirmed the partial mediation ( $t = 2.964, p = 0.00$ ); and goal setting, ICT adoption and managed performance path, the total effect was 0.131, Sobel test confirmed the partial mediation ( $t = 2.330, p = 0.01$ ).

### Discussions and conclusions

The aim of this study was to demonstrate the need for managers of public universities to pay attention to performance management practices, information and communication technology in order to achieve successful managed performance. Three hypotheses were derived from the literature review, tested and confirmed.

*H1* stated that performance management practices that were vested in the agency and goal setting theories have a positive relationship with information and communication technology adoption was tested and confirmed. In support of the finding, Pedro (2001) argued that the parameters of investment in ICTs must be gradually changed because teachers' computers are now both research and teaching tools, and as such essential tools to be financed.

Also, previous studies show that information and communication technology adoption require concerted efforts of the managers from the strategic decisions they make in aligning the business strategy and human resources by instilling pride in employees and acting as role models in bringing about organisational behaviour (Ulrich *et al.*, 2007). This means that managers of public universities have to ensure result-oriented relationships with employees by investing in ICT technology. Total commitment to ICT development, implementation and sustainability by top management of public universities is an imperative in order to meet the dynamic environmental educational demands. Development partners, alumni, students and other stakeholders could be involved in all activities of university, for instance, in curriculum design through use of ICT.

*H2* stated that information and communication technology has a positive relationship with managed performance. This was tested and confirmed. The findings were supported by Lewis *et al.* (2005) who established the importance of information and communication technology (ICT) on both organisational and teaching and learning issues in five Australian Universities. Tusubira *et al.* (2009) asserted that e-learning is the entire learning that public universities should undertake. Brennan *et al.* (1999) argued that any university that teaches using technology has to recreate itself continually. According to Attaran and Attaran (2002) with use of ICT technology

public universities should be capable of: information retrieval and utilisation; communication and data transmission; distribution of services, particularly the badly needed outreach programmes in Uganda; and other institutional transactions. However, there is need for an increased bandwidth, which is still problematic in developing countries and Uganda in particular.

*H3* stated that performance management practices have a positive relationship with managed performance. In support of these findings, Thornhill and Saunders (1996) argued that high quality provisions and the need to reduce unit costs yet improve productivity in higher education is a must. Yet, public universities were still striving to come up with a unit cost per student agreeable to all stakeholders without endangering university education access and quality of services (Kasozi, 2005). According to Varcoe, 1995 cited in Amaratunga and Baldry (2000), operating costs keep going up and the user expectations increasing in educational settings. Tsubira *et al.* (2009) cited the case of Makerere University where the ratio of academic and research staff to administrative and support staff highly exceeded that of other countries. This increased staff in an efficient environment reduced productivity and efficiency, calling for even more staff (Tsubira *et al.*, 2009). Such inefficiencies existed in older universities, which were also larger in size. The results support Verbeeten's (2008) findings that large organisations appear to have more difficulty in defining clear and measurable goals and are less likely to use incentives and have lower quality performance. In this study, young universities had better agency relations and generally managed performance better than the older ones. The knowledge contribution of this study is that the theories agency and goal setting converge into performance management practices to explain and provide information on how to attain managed performance (quality services, service delivery and cost reduction).

However, all public universities involved employees in goal setting as established from the strategic plans but the theory had a weak prediction of performance. This required universities to have competent, committed and motivated workforce using a number of human resource and quality initiatives (Thornhill and Saunders, 1996), which most these public universities lacked. Consequently, student demonstrations against poor quality services were common phenomena at public university campuses (Businge, 2009). Other findings included establishment of a mediation effect of Information and communication technology adoption on performance management practices and managed performance.

### **Limitations and future research**

This was a cross-sectional survey using quantitative approach, by its nature precludes cause-effect relationships being uncovered (Schauffeli *et al.*, 2008). The study relied on self-report measures, so common method biases could affect the magnitudes of bivariate correlations between the variables. There is need for complementary longitudinal studies as an intervention. Attempts to minimize common method biases included collecting data from the different strata of each public university, which geographically in different parts of Uganda and the questionnaires were distributed and collected at different times. Furthermore, this study dwelled on quantitative approach, failing to tap salient issues from the respondents. Using different methodological approaches (Kozlowski and Klein, 2000), particularly blending both qualitative and quantitative approaches for more enriching results is necessary.

---

**References**

- Aickelin, P., Battisti, G., Celia, H., Clegg, C., Fu, X., DeHoyos, R., Iona, A., Petrescu, A. and Peixoto, A. (2008), "Enhancing productivity: the role of management practices", AIM working paper series 062, February, The University of Nottingham, Nottingham.
- Alreck, P.L. and Settle, R.B. (1995), *The Survey Research Handbook*, 2nd ed., Irwin, Chicago, IL.
- Amaratunga, D. and Baldry, D. (2000), "Assessment of facilities management performance in higher education properties", *Facilities*, Vol. 18 Nos 7/8, pp. 293-301.
- Armstrong, M. (2000), *Performance Management: Key Strategies and Practical Guidances*, Kogan Page, London.
- Arnal, E., Ok, W. and Torres, R. (2001), "Knowledge, work organisations and economic growth", occasional papers no. 50, OECD, Paris.
- Attaran, M. and Attaran, S. (2002), "Collaborative computing technology: a hot new managing tool", *Team Performance Management*, Vol. 8 Nos 1/2, pp. 13-20.
- Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-82.
- Berle, A.J. and Means, C.G. (1932), *The Modern Corporation and Private Property*, Harcourt Brace and World, New York, NY.
- Boonstra, J. and Vink, M. (1996), "Technological and organisational innovation: a dilemma for fundamental change and participation", *European Journal of Work and Organisational Psychology*, Vol. 6, pp. 84-112.
- Brennan, J., Fedrowitz, J., Huber, M. and Shah, T. (1999), *What Kind of University? International Perspectives on Knowledge, Participation and Governance*, SRHE and Open University Press, Buckingham.
- Brynjolfsson, E. and Mendelson, H. (1993), "Information systems and the organisation of modern enterprise", *Journal of Organisational Computing*, Vol. 3, pp. 245-55.
- Busi, M. and Bititci, U. (2006), "Collaborative performance management: present gaps and future research", *International Journal of Productivity and Performance Management*, Vol. 55 No. 1, pp. 7-25.
- Businge, C. (2009), "MUBS students' demonstration turns violent", *The New Vision*, October 8, p. 1.
- Clarke, T. and Clegg, S. (2000), "Management paradigms for the new millennium", *International Journal of management Reviews*, Vol. 2 No. 2, pp. 45-64.
- Cohen, J., Cohen, P., West, S.G. and Aiken, L.S. (2003), *Applied Multiple Regression/Correlation Analysis for the Behavioural Sciences*, 3rd ed., Lawrence Erlbaum, Hillsdale, NJ.
- Cooper, D.R. and Schindler, P.S. (2003), *Business Research Methods*, 8th ed., McGraw-Hill, New York, NY.
- De Waal, A. (2003), "Behavioural factors important for the successful implementation and use of performance management systems", *Management Decision*, Vol. 8, pp. 688-97.
- DiMaggio, P., Hargitaai, E., Neuman, W.R. and Robinson, J.P. (2001), "Social implications of the internet", *Annual Review of Sociology*, Vol. 27, pp. 307-36.
- Dyl, E.A., Frant, H.L. and Stephenson, C.A. (1996), "Governance structure and performance of not-for-profit corporations: evidence from medical research charities", paper presented at forum, University of Arizona, Tucson, AZ, January.
- European Commission (2008), "E-inclusion", report presented at the Ministerial Conference, Vienna, 30 November-2 December.

- Field, A. (2005), *Discovering Statistics Using SPSS*, Sage Publications, London.
- Frese, M. (2005), "Grand theories and mid-range theories: cultural effects on theorizing and the attempt to understand active approaches to work", in Smith, K.G. and Hitt, M. (Eds), *Great Minds in Management: The Process of Theory Development*, Oxford University Press, Oxford, pp. 84-108.
- Gonzalez, R. (2008), "Coordination and its ICT support in Crisis Response: confronting the information-processing view of coordination with a case study", *Proceedings of the 41st Hawaii International Conference on System Sciences – © 2008 IEEE 1*.
- Herrmann, P. and Datta, D. (2005), "Relationships between top management team characteristics and international diversification: an empirical investigation", *British Journal of Management*, Vol. 16 No. 1, pp. 69-78.
- Heskett, J.L., Jones, T.O., Loveman, G.W., Sasser, W.E. and Schlesinger, L.A. (1994), "Putting the service-profit chain to work", *Harvard Business Review*, Vol. 72 No. 2, pp. 164-74.
- Huang, T. (2001), "The effects of linkage between business and human resource management strategies", *Personnel Review*, Vol. 30 No. 2, pp. 132-45.
- Hui, H., Cheng, K. and Gan, Y. (2003), "Psychological collectivism as a moderator of the impact of supervisor-subordinate personality similarity on employees' service quality", *Applied Psycholog: An International Review*, Vol. 52 No. 2, pp. 175-92.
- Jensen, M. and Meckling, W. (1976), "Theory of the firm: managerial behaviour, agency costs, and ownership structure", *Journal of Financial Economics*, Vol. 3, pp. 305-60.
- Joan, M. (1998), "The power of virtual integration: an interview with Dell Computer's Michael Dell", *Harvard Business Review*, Vol. 76 No. 2, pp. 72-84.
- Karake, Z. (1995), "Information technology performance: agency and upper echelon theories", *Management Decision*, Vol. 33 No. 9, pp. 30-7.
- Kasozi, A.B. (2005), *The Politics of Fees in Uganda*, available at: [www.bc.edu/bc\\_org/avp/soe/cihe/newsletter/Number43/p23\\_Kasozi.htm](http://www.bc.edu/bc_org/avp/soe/cihe/newsletter/Number43/p23_Kasozi.htm) (accessed 2 November 2009).
- Kozlowski, S.W.J. and Klein, K.J. (2000), "A multi-level approach to theory and research in organisations: Contextual, temporal, and emergent processes", in Klein, K.J. and Kozlowski, S.W.J. (Eds), *Multilevel Theory, Research, and Methods in Organisations: Foundations, Extensions, and New Directions*, Jossey-Bass, San Francisco, CA, pp. 3-90.
- Krejcie, R. and Morgan, D. (1970), "Determining sample size for research activities", *Educational and Psychological Measurement*, Vol. 30, pp. 607-10.
- Latham, G.P. (2001), "The importance of understanding and changing employee outcome expectancies for gaining commitment to an organisational goal", *Personnel Psychology*, Vol. 54, pp. 707-16.
- Lewis, T., Marginson, S. and Snyder, I. (2005), "The network university? Technology, culture, and organisational complexity in contemporary higher education", *Higher Education Quarterly*, Vol. 59 No. 1, pp. 56-75.
- Locke, E.A. (1968), "Toward a theory of task motivation and incentives", *Organisational Behaviour and Human Performance*, Vol. 3 No. 15, pp. 157-89.
- Locke, E.A. (1978), "The ubiquity of the technique of goal-setting in theories of and approaches to employee motivation", *Academy of Management Review*, Vol. 3 No. 3, pp. 594-601.
- Locke, E.A. and Latham, G.P. (1990), *A Theory of Goal Setting and Task Performance*, Prentice-Hall, Englewood Cliffs, NJ.
- Locke, E.A. and Latham, G.P. (2002), "Building a practically a useful theory of goal setting and task motivation", *American Psychologist*, Vol. 57, pp. 705-17.

- 
- Locke, E.A. and Latham, G.P. (2005), "Goal setting theory: theory building by induction", in Smith, K.G. and Hitt, M. (Eds), *Great Minds in Management: The Process of Theory Development*, Oxford University Press, Oxford, pp. 128-50.
- London, M., Smither, J.W. and Adsit, D.J. (1997), "Accountability: the Achilles' heel of multi-source feedback", *Group and Organisational Management*, Vol. 22, pp. 162-84.
- McCarthy, A. and Garavan, T. (2007), "Understanding acceptance of multisource feedback for management development", *Personnel Review*, Vol. 36 No. 6, pp. 903-17.
- Mamdani, M. (2007), *Scholars in the Marketplace; The Dilemmas of Neo-Liberal Reform at Makerere University, 1989-2005*, Fountain Publisher, Kampala.
- Martinez, V. and Kennerley, M. (2005), "Impact of performance management reviews: evidence from an energy supplier", pp. 19-22, EurOMA 12th Annual Conference, Budapest.
- Miner, J.B. (2003), "The rated importance, scientific validity, and practical usefulness of organisational behaviour theories", *Academy of Management Learning and Education*, Vol. 77, pp. 250-68.
- Mitchell, T.R. (1997), "Matching motivational strategies with organisational contexts", *Research in Organisational Behaviour*, Vol. 19, pp. 57-149.
- Myners, P. (1998), "Improving performance reporting to the market", in Carey, A. and Sancto, J. (Eds), *Performance Measurement in the Digital Age*, ICAEW, London, pp. 27-33.
- Nomdo, G.J. (2004), "Collaborating within the 'risk zone': a critical reflection", *Active Learning in Higher Education*, Vol. 5, p. 205.
- Ntoumanis, N. (2001), *A Step by Step Guide to SPSS for Sport and Exercise Studies*, Routledge, London.
- Olson, D. (2000), "Agency theory in the not-for-profit sector: it's role at independent colleges", *Nonprofit and Voluntary Sector Quarterly*, Vol. 29, p. 280.
- Parasuraman, A., Zeithmal, V.A. and Berry, L.L. (1988), "SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.
- Pedro, F. (2001), "Transforming on-campus education: promise and peril of information technology in traditional universities", *European Journal of Education*, Vol. 36 2, December 16, pp. 175-87.
- Pollit, C. (2006), "Performance management in practice: a comparative study of executive agencies", *Journal of Public Administration Research and Theory*, Vol. 16, pp. 25-44.
- Punnett, B.J., Corbin, E. and Greenidge, D. (2007), "Assigned goals and task performance in a Caribbean context: extending management research to an emerging economy", *International Journal of Emerging Markets*, Vol. 2 No. 3, pp. 215-35.
- Rheingold, H. (1993), *The Virtual Community: Homesteading on the Electronic Frontier*, Addison-Wesley, Reading, MA.
- Schauffeli, W., Taris, T. and Van Rhenen, W. (2008), "Workaholism, burnout, and work engagement: three of a kind or three different kinds of employee well-being?", *Applied Psychology: An International Review*, Vol. 57 No. 2, pp. 173-203.
- Smith, K.G. and Hitt, M. (2005), *Great Minds in Management: The Process of Theory Development*, Oxford University Press, Oxford.
- Sobel, S.E. (1982), "Asymptotic intervals for indirect effects in structural equation models", in Leinhardt, S. (Ed.), *Sociological Methodology*, Jossey-Bass, San Francisco, CA, pp. 290-312.
- Straub, D.W. (1989), "Validating instruments in MIS research", *MIS Quarterly*, Vol. 13 No. 2, pp. 147-66.

- Tabachnick, B. and Fidell, L. (2001), *Using Multivariate Statistics*, Allyn & Bacon, Needham Heights, MA.
- Thomas, S. (1996), *Decision Making with Dependence and Feedback: The Analytic Network Process*, RWS.
- Thornhill, A. and Saunders, M. (1996), "The role of employee communications in achieving commitment and quality in higher education", *Quality Assurance in Education*, Vol. 4 No. 1, pp. 12-20.
- Tusubira, F., Mulira, N., Kahiigi, E. and Kivunike, F. (2009), *Transforming Institutions through Information and Communication Technology*, Makerere University, Makerere University Printery, Kampala.
- Ullrich, J., Wieseke, J., Christ, O., Schulze, J. and Van Dick, R. (2007), "The identity-matching principle: corporate and organisational identification in a franchising system", *British Journal of Management*, Vol. 18, pp. S29-S44.
- Van de Walle, D. (1997), "Development and validation of a work domain goal orientation instrument", *Educational and Psychological measurement*, Vol. 57, pp. 297-301.
- Varcoe, B. (1995), "A financial perspective of facilities management", unpublished report, University of Salford, Salford.
- Vecchio, R.P. and Appelbaum, S.H. (1995), *Managing Organizational Behaviour: A Canadian Perspective*, Dryden-Harcourt Brae, Toronto.
- Verbeeten, F. (2008), "Performance management practices in public sector organisations Impact on performance", *Accounting, Auditing & Accountability Journal*, Vol. 21 No. 3, pp. 427-54.
- Vilaseca-Requena, J., Torrent-Sellens, J. and Jiménez-Zarco, I. (2007), "ICT use in marketing as innovation success factor: enhancing cooperation in new product development processes", *European Journal of Innovation Management*, Vol. 10 No. 2, pp. 268-88.
- Walters, M. (1995), *The Performance Management Handbook*, Institute of Personnel and Development, London.
- Wolf, K. (1999), "Teaching portfolios and portfolios conversations for teacher educators and teachers", *Action in Teacher Education*, Vol. 17 No. 1, pp. 30-9.
- Worrall, L. (2005), *Benchmarking the Performance of ICT in Local Government*, SOCITM, London.
- Worthen, B.L., White, K.R., Fan, X. and Sudweeks, R.R. (1999), *Measurement and Assessment in Schools*, Addison Wesley Longman, New York, NY.
- Zahra, S., Sapienza, H. and Davidson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, and research agenda", *Journal of Research Studies*, Vol. 43, p. 4.

### Further reading

- Chowdhury, S. and Wolf, S. (2004), *Use of ICTs and the Economic Performance of SMEs in East Africa*, UNU/WIDER, Helsinki.
- Corsi, T.M. and Boyson, S. (2003), "Real-time e-supply chain management: diffusion of new technologies and business practices", *Transportation Research Part E*, Vol. 39, pp. 79-82.
- Cronbach, L.J. (1957), "The two disciplines of scientific psychology", *The American Psychologists*, Vol. 12, pp. 671-84.
- Dewatripont, M., Jewitt, I. and Tirole, J. (1999), "The economics of career concerns, part 1: comparing information structures", *Review of Economic studies*, Vol. 66, pp. 183-98.
- Fama, E.F. (1980), "Agency problems and the theory of the firm", *Journal of Political Economy*, Vol. 88, pp. 288-307.

- 
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18, pp. 39-50.
- Makerere University (2008/2009), *Makerere University Strategic Plan (2008/2009-2018/2019)*, Makerere University, Makerere University Printery, Kampala.
- SPSS (1999), *Statistical Package for the Social Sciences*, SPSS, Chicago, IL, available at: [www.spss.com](http://www.spss.com)

### About the authors

James R.K. Kagaari is a PhD Candidate, holds a Masters' degree in Organisational Psychology and a Bachelor of Arts in Social Sciences. He is a Lecturer at Kyambogo University and Makerere University Business School. He is interested in developing and testing models on performance management. His publications include: *Evaluation of the Effects of Vocational Choice and Practical Training on Students' Employability and Engineering Lecturers' Competencies and Organisational Citizenship Behaviour (OCB)* at Kyambogo University. James R.K. Kagaari is the corresponding author and can be contacted at: [kagaari@yahoo.com](mailto:kagaari@yahoo.com)

John C. Munene holds a BA, MA degree and a PhD. He is a human resource specialist and consultant with interests in Organisational Development and Human Behaviour in the work place. He is currently a Professor of Occupational Psychology with over 20 years of post doctorate training experience. He is a Professor at Makerere University Business School and has mentored several staff and students both on masters and doctoral programmes.

Joseph Mpeera Ntayi holds a Doctor of Philosophy (PhD), International Postgraduate Diploma in Marketing (UK), MCIM, International Postgraduate Diploma in Project Management, Masters of Business Administration (MBA) and Bachelor of Commerce ((BCom) (Hons)) from Makerere University. He is a member of the Chartered Institute of Marketing and Member of the European Union Marketing Association. He lectures and supervises undergraduates, masters and doctoral students. He has undertaken research in the areas of entrepreneurship, marketing and procurement in Uganda's small scale industries (SME) and public sector. His recent work is an investigation of procurement practices, collaborations, supply chain performance and organizational performance. A case of small and medium enterprises in Uganda.