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Can reflection boost competences development in organizations?

Florence Nansubuga, John C. Munene and Joseph M. Ntayi
Makerere University, Kampala, Uganda

Abstract

Purpose – The purpose of this paper is to examine the gaps in some existing competence frameworks and investigate the power of reflection on one's behavior to improve the process of the competences development.

Design/methodology/approach – The authors used a correlational design and a quasi-experimental non-equivalent group design involving a baseline assessment (pre-test) of participants' ability to reflect on their actions instead of applying the standardized competences. Participants were placed in a treatment group and control groups. The treatment group was exposed to a coaching intervention in reflection and operant competence development. Six months later, the authors conducted post-test assessment to assess effect size caused by the coaching intervention regarding the treatment group's ability to reflect and transform standardized competences into operant competences.

Findings – The results showed that reflection and operant competences correlates significantly. Second, there was a larger effect size between the pre-test and post-test assessment results for the treatment group implying change in reflective practice and acquisition of operant competences.

Practical implications – The results demonstrated the need to utilize reflection as a component that will add value to the existing competence frameworks.

Originality/value – The research adds value to the existing competence development frameworks by introducing reflective practice among managers to create competences that are compatible with the operational context.

Keywords Reflection, Coaching, Operant competences, Operational context

Paper type Research paper

Introduction

As organizations are struggling to cope with the changing demands in the work environments, governments, managers, human resources practitioners, scholars and consultants have today joined the competence movement (CM) to develop frameworks that can address the challenges associated with productivity in organizations. This paper examines the strengths and the gaps in some of the dominant competence frameworks that have been adopted all over the world. While a competence is the ability to deliver expected performance results (Armstrong, 2006), a competence framework is a set of standardized general competences against which employees who perform their jobs correctly are observed, assessed and certified (Cheng *et al.*, 2003). These competence frameworks are deemed to be essential at the workplace, with the aim of providing standards of performance, increasing job satisfaction and enhancing career development opportunities (McAdam and Crowe, 2004).

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The origin of competence frameworks

In America, for instance, the national skills standard (NSS) board developed an input-oriented competence framework in the school curriculums as a way of promoting a culture of self-managed learning, planning and development (McAdam and Crowe, 2004). Training manuals have been designed specifying competences that are assumed to be applicable in the various work contexts. The manuals are also used to accredit students at the different levels of qualifications, that is certificate, diploma and degree levels (ANTA, 1999). Some of the manuals developed were based on the assumption that the recipients' needs will determine the context of operation within which a particular set of competences can be applied (ANTA, 1999). Despite the fact that the framework provides a guide on the competences required for a given job, it seems to have disregarded the influence of other environmental factors that constantly create changes in the operational context, such as culture, politics, technology and access to operational resources (funds, assets, facilities, etc.). Addressing these changes will demand a reflective mind and combinations of expertise that is unique to a particular job and its operational context (Broussine, 2000; Nansubuga and Munene, 2013a, 2013b).

In other instances, the UK also introduced an outcome-oriented competence framework called the National Vocational Qualification (NVQ) standards. The competence standards in this framework are used as a guide to train, assess and accredit employees in what to do and achieve, whenever and wherever they are used (Cheng *et al.*, 2003 and Horton, 2000). Later on in 1995, Australia advanced a combined output- and outcome-oriented competence framework that was implemented using Training Packages Development Handbook (TPDH) with standardized competences required of an employee at the workplace (Wheelahan and Carter, 2001). Of recent, in 2008, the European Commission established the European Qualification Framework (EQF) which consolidated the National Qualification Frameworks in Europe. EQF eliminated the diverse approaches for determining competence standards by the different European countries and adopted a new principle of equivalence that shifted the focus from outputs and introduced a single set of criteria for accrediting outcome-oriented competence standards in a given occupation across nations (Le Deist and Tūtlys, 2012).

The outcome-oriented approach dominating the three frameworks of the UK, Australia and Europe, has been criticized for its failure to recognize lower-level achievements (outputs) as well as the process of attaining the outcome standards (Brockmann *et al.*, 2008). The concentration on assessing higher-level achievements (outcomes) was considered implausible and a narrow definition of competence, as learning outcomes cannot be distinctly measured outside the task accomplishment process and outputs (Brockmann *et al.*, 2008). In general, the standardization of competences for managerial roles are ostensibly unrealistic because the activities of managers are too diverse to be accurately defined as a standard statement (Purcell, 2001). Besides, in today's hyper dynamic work environment, the standardized competences are likely to promote automatization and compromise the holistic integrated nature of managerial operations. Furthermore, the standardized generic competences that cut across all organizations in the same niche would imply a marginalized focus on the required inputs and outputs of the individual performing a given set of tasks as well as the process through which the tasks are performed (Cheng *et al.*, 2003). Under such circumstances, employees may not be able to modify their actions or relate them to the desired results once a novel change occurs in the operational

environment (Bergenhenegouwen *et al.*, 1997). The competences, therefore, are likely to become reactive rather than proactive when dealing with challenges in a turbulent environment (Nansubuga and Munene, 2013a, 2013b; Cheng *et al.*, 2003).

Competence development in Uganda

In 2007, the Ministry of Public Service (MPS) of Uganda adopted ideas from Canada and developed a competence dictionary that would guide all public workers in their operations. The Dictionary focuses on 18 generic behavioral (traits and attitudes expected of an employee) and 16 generic technical competencies (knowledge and skills) which apply to all public officers regardless of their professions. Both the behavioral and technical competences are structured following four proficiency levels. The highest proficiency level is "the expert knowledge level", the next is "the experienced knowledge level" followed by "the working knowledge level" and the lowest is "the learning level" (MPS Competence Dictionary, 2007). The employee who could perform at the highest proficiency level (expert knowledge) is expected to have knowledge that can be applied at all the other three lower levels. The one who could perform only at the learning level is considered to be a novice. The MPS competence dictionary seemed to have adopted the "input" oriented approach of the NSS Board, where all employees in public service organization of Uganda were expected to customize these standard competences into their job descriptions, despite the differences in their job roles and the operational context. However, findings from a study that was conducted in nine sampled district local governments (DLGs) of Uganda found that managers were not able to customize and later on operationalize the competences in the different working environments (Nansubuga, 2008). For instance, one of the technical competences required managers operating at the highest level (expert level) to monitor adherence to national (Ugandan) procurement principles and procedures when procuring providers of services, goods and works. However, with the introduction of the Sector-wide approaches (SWaps), which required the DLGs to collaborate with development partners and other local partners (community-based organizations) to jointly serve the community (Uganda Partnership Policy, 2003), the managers were not able to deliver the services as expected. The study conducted by Nansubuga (2008) indicated that the district managers found it difficult to implement the joint/partnership projects and, at the same time, follow national procurement principles and procedures. The partners' timeframe for completing the projects demanded a shorter period than the standardized national procurement process. As a result, the manager failed to produce the desired results in time and they were evaluated as incompetent by the collaborating partners. This scenario describes the need for managers to exercise flexibility and make appropriate decisions when utilizing the standardized competences to respond to the demands of the internal and external operational environments. While the internal demands centrally focus on initiatives and innovations of a particular organization to deliver a given service, the external demands are beyond the organizations direct control, technologies and innovations [European Union Presidency Conference (EUPC), 2004]. In the above scenario, collaborating with partners created an operational environment that demanded for a different set of competences (i.e. adapting new technologies and innovations) that would satisfy the expectation of the collaborating partners. Accordingly, obtaining a different set of competences required managers to engage

reflection to unlearn and relearn new ways of solving operational challenges (Broussine, 2000; Drejer, 2000; Høyrup, 2004; Munene *et al.*, 2004).

This paper attempts to demonstrate that with the continuous influence of culture, politics, technology and any other factor causing change in the operation context, the recipients' needs can easily become unstable (Broussine, 2000). Consequently, the competences that were thought to meet the desired results may cease to deliver the expected outputs (Broussine, 2000). More so, the managers who fail to handle the emerging issues in the changing work context will be considered incompetent in this particular context, as they may not be able to produce the expected results (Milliken *et al.*, 2002). Therefore, the standardized competences would rather need to be modified to suit the emerging changes in operational context and to enable that managers remain competent regardless of the situation.

Reflecting critically on action to develop operant competences

This paper adopted the Schön's (1987) theory of reflection-on-action in which he proclaimed that individuals should be taught to unlearn some of the skills and assumptions that served them well in the past and think of alternative ways for achieving organizational objectives in relation to the emerging work demands. The idea of forwarding reflection is to propose a more comprehensive theory to deal with the dominant epistemology of accredited standardized competences (Hackett, 2001) and at the same time to help employees solve their daily problems within the complex environments (Schön, 1987). The arguments in this paper are based on the understanding that the accredited standardized competences tend to become routinized or automated, and in the process, the actors would start applying them intuitively without thinking critically about the consequences of their actions. The knowledge and behaviors applied in this nature would ignore the influence of contextual interacting factors and, thus, fail to yield the desired results (Høyrup, 2004). In such a situation, reflection can add value by allowing the individual to examine what could be socially, culturally or politically problematic (Marsick and Watkins, 1990). The individuals would then re-examine their previous and current interactions with the operational context to establish what was done well and what needs to be improved if they are to produce desired results (Atkinson, 1999; Rigg and Trehan, 2008). This process of unlearning and relearning enables the individual to consciously frame and reframe the complex and ambiguous problems within the work context (Nansubuga and Munene, 2013a, 2013b). The individual then may decide whether to apply the learned competences as they are or to adjust the competences rationally in a manner that is most appropriate to address the recipient's needs (Atkinson, 1999). This ability is practically essential especially for the managerial jobs that normally face complex problems which cannot be addressed with a single formula solution as suggested by the accredited competences (Rigg and Trehan, 2008).

Reflecting critically on one's actions serves to blend the accredited standardized competences with the practical experiences to form new operant competences that are compatible with the complexities or ambiguities in the operational context (Marsick and Watkins, 1990). Staddon (2010) used the concept "operant" to describe behaviors that are consequence-oriented. Staddon argues that people's behavior is influenced by the environment, and therefore, people keep modifying their behavior to address the demands of the environment. He referred to the modified behaviors as the operant

behaviors. In this study, we deliberately espoused the term operant competences, to refer to those actions that directly have some effects on the operational context. Based on this supposition, we hypothesize that:

H1. There is a significant positive relationship between critical reflection and operant competences.

Recent studies accentuate reflection as a strategy for empowering managers in all types of professions and organizations to learn new approaches of making decisions about their work situations (Woerkom, 2003). Critical reflection is concerned with constructing and deconstructing one's own experiences and the meanings they donate through dialogues and multiple lenses, while, at the same time, the individual is able to reject universal and generalizable truths, such as the application of standardized competences for the various occupations (Brookfield, 1987). According to Walsh (2009) managers are becoming lifelong learners with greater need for solving problems, developing interpersonal skills and understanding the operational context. These attributes demand a disciplined mental mind that can engage in arguments that evaluate propositions and make judgments to guide the development of accurate competences (Ennis, 1993). The personification of using reflection to examine one's action is to comprehensively include all components of competence development that focus on inputs, process, outputs, outcomes and operational context (Verdonschot, 2006). It should, therefore, be noted that coaching managers in reflection during competence development is essential, as it results into production of operant competences. Gray (2007) noted that critical reflection is never a natural process but learning that has to be strategically facilitated through formal coaching, mentoring or action. Through coaching, people engage in reflection dialogues and the mistakes that were previously made are transformed into positive learning experiences on basis of which operant competences are formed (Gray, 2007). Accordingly, employees who have been coached in critical reflection are more likely to deliver competences that meet desired outputs than those that were not coached. We, therefore, hypothesized that:

H2a. There will be a significant difference between the reflection abilities of the treatment (coached) group and the control groups after the coaching.

H2b. There will be a significant difference between the operant competences of the treatment (coached) group and control groups after the coaching.

H3a. The coaching intervention will create a significant positive change effect on the reflection abilities of the treatment (coached) group.

H3b. The coaching intervention will create a significant positive change effect on the operant competences of the treatment (coached) group.

Method

Study designs and procedure

In this study, we used a quasi-experimental non-equivalent group, pre-test/post-test and correlation designs. The design involved baseline assessment (pre-test) of participants' ability to reflect on their actions when delivering services to the public as well as a post-test assessment which was administered after a period of six months using structured questionnaires. The study grouped participants into three; the treatment

(coached) group and two control/comparison groups (not coached). The second control group comprised respondents who never participated at the pre-test measure. The purpose was to check for potential biases that could result as a matter of interacting with the ontrol group 1 during the pre-test measure (normally referred to as Hawthorne effects).

The coaching intervention was introduced to the treatment group after pre-test assessment. It involved input-, output-, outcome- and process-oriented approaches in which participants reflected on their actions and profiled their competences (knowledge, behavior and attitudes) in reference to the current operational context. The participants were coached to reflect and articulate operant competences using words/phrases that are precise and can be used to conventionally measure employee knowledge, behavior and attitudes (Anderson and Krathwohl, 2001). The coaching intervention took two days in each district and was composed of four hours of discussion while reflecting on how competences are adopted to the changing operant contexts. This was followed by a two-phased practical activity in which each participant described his/her job role, a minimum of five key result areas (KRAs) and the operant competences executed under the current operational context together with critical outputs from the executed competences. We defined a "role" as a set of obligations that a job incumbent has in an organization. Second, we defined a key result area as a broad crucial area where an individual must deliver results to aid the achievement of the organizational goals (Intagliata *et al.*, 2000).

Critical reflection

For each KRA that was identified, the participants were coached through an interactive dialogue to describe the context of operation (operational environment). The four questions below guided the job incumbent to engage in a critical reflection process to examine the demands of the operational context/environment and to serve as a basis of articulating the operant competences (knowledge, behavior and attitudes).

Q1. Whom do you interact with?

Q2. What is the content of interaction?

Q3. What difficult problems do you solve when carrying out the KRA?

Q4. What difficult decisions and flexibility do you exercise when carrying out the KRA?

The critical reflection process helped participants to examine the complexity of the operational context of their job roles to modify the generic competences that may be inappropriate to the operational context. Table I presents an illustration of responses to the four questions examining the context of interaction (in a tabular form). The illustration was extracted from one of the participant's job profile whose job title was "National Agricultural Advisory Services (NAADS) coordinator" and whose role was "to develop and monitor the implementation of NAADS program for farmers/farmers' groups to access information, knowledge and technologies for profitable agricultural production". Among the various KRAs that were profiled in this role, we focused on "Monitoring the utilization and accountabilities of resources for NAADS program".

Table I.
Describing the context of interaction by examining the content of interaction, the problem solved and the difficult decisions made using one of the NAADS coordinator's KRA

Who do you interact with	Content of interaction	Problems solved on regular basis	Difficult decisions and flexibility
District accountant	Discuss accountability requirements and report writing Communicate the NAADS budget lines	Some staff exaggerate payments Incomplete documents on payments	Rejecting incomplete report Spending more than what was budgeted to facilitate participatory monitoring
Sub-county staff technical staff	Discuss the accounting procedure Agree on the payment process Approve requisitions Receive accountability reports Verify accountability as per the approved work plan Verify expenditures as per the approved budget Find out whether closing cash book balances are in line with bank balances Arrange visits to check on community projects Discuss activities and expenses appropriate to the budget line Discuss arbitration procedures in case of non-compliance	Late release of funds Non-participatory budgeting process Inflation of estimate prices of activities Failure to get clear monitory indicators Negative response toward writing accountability reports Lack of participatory monitoring Failure to give feed back to the farmers Inadequate funds	Holding funds for late submission of accountabilities Leaving out some villages during check visits due to inadequate funds Repeating the monitoring process to get satisfactory results Terminating contracts for non-competence (give warning on some cases)
Community forums/farmers Political leaders	Agree on monitoring indicators Check on implemented project activities Ask them to mobilize more farmers Agree on dates for check visits	Unclear terms of reference Long procurement process of goods and services Changing budget lines that makes budgeting difficult	Deciding what procurement method to use
Service providers	Discuss the terms of reference for providing the service		
Chief internal auditor	Discuss accountability requirements and report writing Communicate budget lines and budgets Communicate accountability requirements as regards NAADS implementation Discuss the reporting format and cash book maintenance	Fraud in sub-county	

Articulating operant competences

In the second phase of coaching, the participants were guided to convert the content of interaction (Table I) into operant competences that were required to deliver expected outputs for each KRA by answering two questions. These questions focused on "what the managers need to know?" and "what they need to be able to do?" to deliver expected results (Armstrong, 2006). The questions aroused the participants to unpack their subconscious (tacit) knowledge into explicit knowledge and to think beyond what they routinely did. As a result, they profiled their roles by focusing on the operant competences for each of the specified KRA as guided by Sanda *et al.* (2011). Table II illustrates the NAADS Coordinator's operant competences as well as the critical outputs basing on the context of interaction (Table I). One specific example, which has been drawn from Table I (column of content of interaction), is when the NAADS Coordinator stated that he discusses with the district accountant the accountability requirements and report writing, NAADS budget lines, etc. Here, the NAADS Coordinator was asked to examine the motive of discussing the accountability requirements and report writing by asking himself a question that "what do you need to know?" By answering that question, the NAADS Coordinator articulated competences, such as:

- amount of funds released to the district;
- activities that were planned;
- number of community projects running; and
- the reporting format.

The same question was answered for all the statements highlighted in Table I. The responses constituted the knowledge competences presented in Table II under "operant competences". After profiling all the *knowledge competences*, the NAADS Coordinator then examined the actions (*behavioral and attitudinal competences*) applicable by answering the question, "What do you need to be able to do?" For instance, if one would have the knowledge about the amount of the funds released to the district, what will he/she be able to do with that piece of knowledge? The actions generated included:

- list planned activities for the running projects;
- compile a list of requirements;
- establish amount of funds required for the various requirements; and
- send the cost requisition to the Accountant (see Table II, column 2 under what you need to be able to do).

The operant competences illustrated above are likely to change when the context of interaction described in the first illustration (Table I) changes. This means that the operational context will change depending on the influencing factors, such as technology or project design or collaborating partners. Second, when the operational context changes, the operant competences will also change to produce desired results. The implication of the changes in the operational context and operant competences is that critical reflection is an inevitable tool for competence development which should be continuously applied if employees are to remain competent.

Key result area	Operant competences	Critical outputs
Monitor the utilization and accountabilities of resources for NAADS program in line with NAADS guidelines	What you need to know (knowledge) Amount of funds released to the district Activities that were planned Materials and requirements for each activity Estimated funds for each activity Previous accountability reports that were submitted Bank account status Number of community projects running How to develop monitoring indicators The reporting format What you need to be able to do (behavioral and attitudinal) Review the work plans and list activities that required funding according to the approved budget List the planned activities for the running projects Compile a list of requirements Establish amount of funds required for the various requirements Send the costed requisitions to the accountant Compare expenses in accountability forms with expenses in approved requisition Receive accountability reports from the district officials and technical staff Review, take note of variances in accountability reports and obtain explanations from the relevant officials and staff Reconcile cash book balances with bank balances according to the procedures Visit and check on the progress of each of the community projects Establish if funds were correctly allocated through acknowledgement of receipt by recipients in reference to the work plans and budgets Establish the staff members and district officials in charge of disbursement of funds to the community projects Schedule a meeting with sub-county staff and technical staff and discuss arbitration procedures in case of non-compliance	Requisitions approved Total amount of funds required for material computed and disbursed to the users Accountability reports from the district officials and technical staff reviewed Cash book balances and bank balances reconciled Community projects audited Accuracy of receipt by recipients checked Arbitration meetings in case of non-compliance held

Table II.
Describing what you need know and be able to do, how and critical outputs using one of the NAADS coordinator's KRA

Participants

The participants were selected from nine DLGs. The initial total target sample was 134 during the pre-test period and 207 at the post-test period. These specifically included employees in managerial positions. During the pre-test, the treatment group had 65 participants and the first control group had 69 participants. Some of the managers changed jobs; the number of participants during the post-test reduced to 60 for the treatment group I and 63 for the control group. However, at this period, we introduced ontrol group 2 ($N = 84$). We could not follow-up on the managers that changed jobs because their operational context had changed and it was crucial for this study to remain within the same context.

Instrument and measures

The measures for reflection were adopted from validated scales of previous studies (Wittich *et al.*, 2010) and others from studies that were based on grounded theory (Yoong, 1999). A four-point Likert scale instrument with response scores ranging from 1: strongly disagree, to 4: strongly agree. Sample items included:

- takes time to rethink about work processes;
- captures information that might be lost;
- have described all sources of information; and
- have described all service recipients I interact with.

We had 30 items measuring reflection and their alpha coefficient for this scale was 0.89. Operant competences measures were considered to be knowledge and skills generated to deliver expected results. Basing on some previous studies with competence profiling intervention, the items used were found to be tracking the precision of knowledge, skills and attitudes of the managers in DLGs (Nansubuga and Munene, 2013a). The instrument was still based on a four-point scale with measures such as:

(1) review and update objectives;
(2) facilitate stakeholders' information exchange forum;
(3) utilise opportunities to add value to the services;
(4) develop procedures for managing changes; and
(5) monitor budget performance.

We adopted a scale of 28 items with reliability coefficient 0.92 (Nansubuga and Munene, 2013a).

Data analysis

We started by cleaning our data to remove the outliers and increase normality. The Mahalanobis distance maximum value obtained (10.37) was below the critical value of 13.82 recommended for running MANOVA with two dependent variables, thus confirming that we did not violate the normality assumption (Tibachnick and Fidel, 2007). We then computed zero-order correlation coefficient to establish the relationship between reflection and competences. We compared reflection abilities and operant competences of the different groups before and after coaching. We computed Wilks' lambda and the eta square to establish the effect size (Eta-squared values) created by the

coaching intervention in the treatment group. We used Cohen (1988) guideline to interpret the results (i.e. $\eta^2 \leq 0.02$ is small effect, $\eta^2 > 0.02$ and < 0.26 is moderate effect and $\eta \geq 0.26$ is a large effect).

Results

The preliminary results (Table III) from the baseline assessment (before the coaching intervention) were computed for both the treatment and control group1. As anticipated by *H1*, the results confirmed that reflection and operant competences were significantly and positively related ($r = 0.50$, $p < 0.01$). The moderate correlation between reflection and operant competences proved that our data did not suffer multicollinearity. Additionally, the independent test demonstrated that there was no significant difference between the means of the two groups on both reflection and operant competences. The reflection mean score for the treatment group was ($M = 2.32$, $SD = 0.24$) and that for the control group 1 was ($M = 2.35$, $SD = 0.25$) and ($t = 0.89$ and $p > 0.05$). On the other hand, the operant competence mean score for the treatment group was ($M = 2.05$, $SD = 0.26$), and that for the control group 1 was ($M = 2.09$, $SD = 0.24$) and ($t = 0.80$ and $p > 0.05$). This meant that the reflection abilities and operant competences of both the treatment group and control group 1 were at the same level.

Furthermore, we tested *H2a* which anticipated that there will be a significant difference between the reflection abilities of the treatment group and control group 1 after coaching (pre-test). The treatment group had been coached immediately after the baseline assessment for two days. Using the same instrument administered at the beginning of the study, we assessed the participants' reflection abilities six months later, after the baseline assessment. The purpose of the second assessment was to establish whether coaching caused any change in the reflection abilities of the treatment group. Findings (Table III) indicated a significant difference between the mean scores of the two groups on reflection. The mean score for the treatment group was ($M = 2.79$, $SD = 0.38$) and that for the control group 1 was ($M = 2.31$, $SD = 0.24$) and ($t = 8.55$ and $p < 0.05$). These results confirmed that the coaching intervention created difference in the reflection of the two groups. The treatment group expressed a higher degree of reflection than the control group.

In *H2b*, we examined whether there was a significant difference between the operant competences of the treatment group and control groups after the coaching. Findings (Table III) revealed that there was a significant difference between the mean scores of the two groups on operant competence. The mean score for the treatment group was ($M = 2.70$, $SD = 0.48$) and that for the control group 1 was ($M = 2.15$, $SD = 0.31$) while ($t = 7.54$ and $p < 0.05$). These results confirmed that the coaching intervention created

Table III.
Group mean scores, standard deviations, independent sample *t*-test and zero-order correlations between reflection and operant competences before the coaching intervention

Variables	Group	*N*	Mean	SD	SE	*t*	df	*p*	Pearson (r)
Reflection	Treatment	65	2.32	0.24	0.03	0.89	132	0.38	0.50**
	Control 1	69	2.35	0.25	0.03				
Operant competences	Treatment	65	2.05	0.26	0.03	0.80	132	0.43	
	Control 1	69	2.09	0.24	0.03				

Note: **Correlation is significant at the 0.01 level (two-tailed)

a difference in of the two groups. The treatment group still expressed a higher degree of articulating operant competences than the control group (Table IV).

While results from *H2a* and *H2b* give an indication that the coaching intervention created a significant difference between the two groups (treatment and control group 1), the results from those hypotheses did not provide information on the change effect (effect size) in the treatment group. In addition, we wanted to guarantee that the effect size was not influenced by the mere interaction with the participants by introducing ontrol group 2 which did not score the instrument at the pre-test period. To confirm the effect change, we tested *H3a* and *H3b*.

H3a stated that the coaching intervention will create a significant positive change effect on the reflection abilities of the treatment group. The Benferroni's post hoc test for multivariate comparison ($p < 0.025$) confirmed that reflection abilities of the treatment group (M = 2.79, SD = 0.38) was significantly different from that of the control group 1 (M = 2.31, SD = 0.24) and control group 2 (M =2.27, SD = 0.27). As for *H3b* which examined whether the coaching intervention will create a significant positive change effect on the operant competences of the treatment group, the Benferroni's post hoc test results ($p < 0.025$) still confirmed that operant competences of the treatment group (M = 2.70, SD = 0.48) were significantly different from that of the control group 1 (M = 2.15, SD = 0.31) and control group 2 (M =2.13, SD = 0.32). Accordingly, the Wilks' lambda demonstrated that the treatment group's reflection abilities and operant competences were significantly dependent on the coaching intervention $F(2,122) = 50.71$, partial $\eta^2 = 0.45$, $\lambda = 0.55$, $p < 0.001$. These results revealed that overall effect size basing on Wilks' lambda was large (Cohen, 1988) (Table V).

We further examined the estimated marginal means using graphs to confirm the effect size created by the coaching intervention. Figure 1 demonstrated that *H3a* which proposed a significant positive effect on the reflection abilities of treatment group was accepted. The results indicated a greater effect in the reflection abilities of the treatment group where the treatment group mean score changed from 2.32 to 2.79, $F = 70.79$, $\eta^2 = 0.37$, $p < 0.001$. This meant that the coaching intervention explained 37 per cent of the variance in reflection abilities of the treatment group.

In addition, the results in Figure 2 also acknowledged that *H3b* proposed a significant positive change effect on the operant competences of treatment group. The results still indicated a greater effect change in the treatment group's operant competences where the treatment group mean score changed from 2.05 to 2.70, $F = 89.98$, $\eta^2 = 0.42$, $p < 0.001$. In the same way, the coaching intervention explained 42 per cent of the variance in the operant competences of the treatment group.

Discussion

This study was set out to show how reflection on one's behavioral consequences can result into modified context-based competences, branded as "operant competences".

Table IV. Group mean scores, standard deviations and independent sample *t*-test after the coaching intervention

Variables	Group	*N*	Mean	SD	*t*	df	*p*
Reflection	Treatment	60	2.79	0.38	8.55	121	0.01
	Control 1	63	2.31	0.24			
Competences	Treatment	60	2.70	0.48	7.54	121	0.01
	Control 1	63	2.15	0.31			

Reflection can add value to the existing qualifications or accredited standards by transforming them into operant competences which are more dynamic and flexible. Reflection has been considered as a new paradigm shift for practical knowing, acting and learning in a social situation that represents a specific operational context (Schulz, 2005). This paradigm suggests that, as the managers reflect, they are likely to display less of the automated actions and instead evaluate the consequences of their previous actions. This practical knowing, acting and learning enable managers to think critically, evaluate their prior experiences and synthesize new modified operant competences every time they deliver a given task (Schulz, 2005; Rigg and Trehan, 2008). The results of this study confirmed the above assumptions by demonstrating that, when managers

Table V.
Wilks' lambda explaining differences in group means before (pre-test) and after (post-test) the coaching intervention

Variables	Group	Period	*N*	Mean	SD	df	*F*	Wilks' λ	Partial η^2
Reflection	Treatment	Pre-test	65	2.32	0.24	1	37.76	0.55***	0.45***
		Post-test	60	2.79*	0.38				
	Control 1	Pre-test	69	2.35	0.25				
		Post-test	63	2.31	0.24				
	Control 2	Post-test	84	2.27	0.27				
Operant competences	Treatment	Pre-test	65	2.05	0.26	1	75.74		
		Post-test	60	2.70*	0.48				
	Control 1	Pre-test	69	2.09	0.24				
		Post-test	63	2.15	0.31				
	Control 2	Post-test	84	2.13	0.32				

Notes: *$p < 0.05$ (Benferroni's post hoc test results showing the mean that is significantly different from others); ***$p < 0.001$

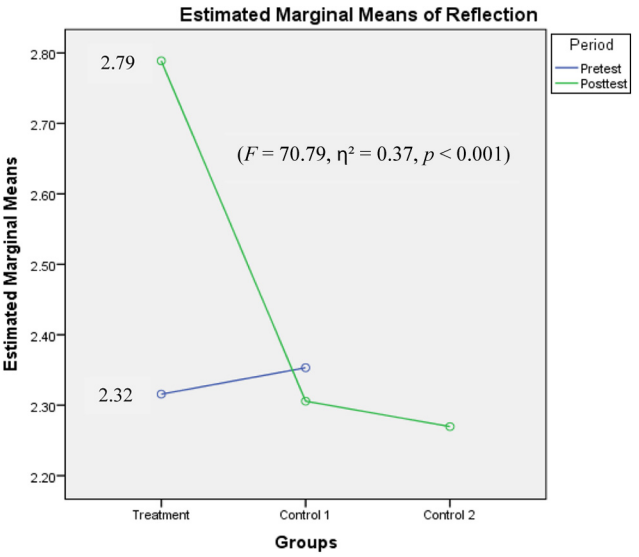

Figure 1.
Effect size created by the coaching intervention in the treatment group's reflection abilities

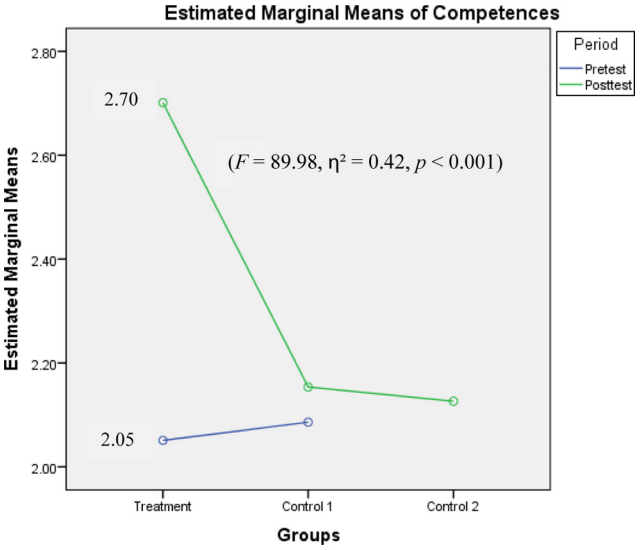

Figure 2.
Effect size created by the coaching intervention in the treatment group's operant competences

are strategically involved in reflection, they become more aware of the operant competences necessary to produce results within a given work context. The implication of this involvement in reflection is that operant competences are context-based and reflection serves as a driver to prompt managers to understand, scan and address the dynamism of their work context.

In this study, we were not only interested in the relationship between reflection and operant competences, the primary assumption was essentially to establish whether managers that were coached in reflection were able to adapt the practice. Furthermore, we examined the assumption that managers will continue evaluating the consequences of their behavior to develop operant competences that can produce desired results in changing contexts. As evidenced by the results, the study demonstrated large effect sizes in reflection and operant competences of the treatment group after six weeks. According to Grissom and Kim (2005), the larger the magnitude of the effect size, the greater the manifestation of the phenomenon or construct being studied. Although the systematic practicing of reflection was new to these managers, they managed to adopt it. This behavioral change was attributed to the fact that reflection is always contextualized in real-life situations and influenced by social relationships, both of which are key tools that make the best learning environment (Hensman, 2001). Contrary to the application of standardized competences, reflection does not impose generic competences that are assumed to apply to the various types of occupations (Brookfield, 1987). Rather, the produced operant competences are dynamic and dependent on the cognitive complexity of the manager to recognize conflicting concepts, integrate perspectives and consider possibilities that can work within a given operational context (Atkinson, 1999). It should also be noted that the competence profiles that are produced from the reflection process are never static standards of competence that can be applied anyhow and anywhere, but are relatively a family of operant competences that are appropriate to a particular context of interaction in a particular occupation and period.

The underlying principle is to groom the manager to adopt a consistent practice of reflection, thus detecting and re-examining the changing contextual factors whenever need arises and adjust competences accordingly. As a work-based informal learning process, reflection has been credited for taking care of inputs, process, outputs, outcomes and the operational context basing on the individuals' past experiences which are normally neglected by the formal accredited learning (Verdonschot, 2006).

Nonetheless, it is worthy recognizing that the operant competence cannot be obtained by chance among managers in a given organization, but they are developed strategically through coaching of managers in critical reflection. The significant change after the coaching intervention which was exhibited by the treatment group on both reflection and operant competence ($\eta^2 = 0.45$, $\lambda = 0.55$, $p < 0.001$) is a sufficient evidence to prove that organizations can no longer only rely on the accredited competences taught in institutions. Although the accredited competences are assumed to take care of the recipient's needs (ANTA, 1999), the factors that influence the dynamism of the operation context especially in developing countries are beyond the recipient's needs. This explains why managers need to think and invent alternative competences that suit the operational context. This is specifically important in situations where appropriate technology is absent or where funding resources for planned activities are meager or when there is need to control political influence. All these factors are outside the normal recipients' needs and the managers need to address them (Broussine, 2000). In such circumstances, regular reflection on one's prior experiences becomes an impetus for critical thinking to conceive relevant operant competences.

Research limitations and future studies

The study adopted a quasi-experimental design which is characterized by non-equivalent groups and non-randomized. The design, according to Harris *et al.* (2006), can easily be affected by internal and external confounding factors, and this may distort the reliability and validity of the measuring instrument. This means that factors such as the mere interaction with the control group may provide clues on what is expected and, thus, create changes in the participant's behavior. However, we tried to address these effects by introducing control group 2, which we never interacted with during the pre-assessment period. This helped us to confirm that the differences between the treatment group and control groups were not subjective. Second, we made sure that all participants' responses were treated anonymously and with confidentiality. We also controlled for attrition effects and maturity effects which, for instance, may have been caused by the new policies, by reducing the study period to six months. This period was presumed to be not only long enough for managers to master reflection and develop operant competences but also short enough to retain participants in their current workplaces. However, there could be a possibility that to some managers, the period was not enough to master the practicing of reflection and detect new recipient's needs that require alternative operant competences.

Another limitation is that the study focused only on employees in managerial positions because they are more involved in decision-making and policy formulation. However, most of the information that they use to solve problems and make policies is collected by the lower cadre officers and these are the ones that interact frequently with the grass root service recipients. We, therefore, propose that future research can be done

to coach lower employees in reflective practices to adapt the changing operational contexts by developing operant competences.

Practical implications

The increase in the mean scores for both reflection and operant competences suggests that the coaching intervention for participants was a successful and should be adopted in complex working environments. On the other hand, we noted that the effect sizes by statistics were large, compared to the actual change in absolute means for reflection abilities and operant competence. Nonetheless, the scores changed from close to 2 (disagreed) to close to 3 (agreed). We have, therefore, inferred that as managers continue to reflect on their actions during their daily operations, their operant competences also improve.

Second, there is a possibility of relapse among coached managers, and in a long run, the once articulated operant competences may culminate into routinized actions without further modification, despite the changes in the operational context (Atkinson, 1999). To prevent relapse, structures that encourage continuous reflection and detection of novel changes in operational context should be put in place.

Third, it is important to note that introducing reflective practice to members in an organization is a transition, and therefore, implementation may require strategies for managing this transition and to maintain continuity at organizational and individual level. One suggested strategy is to create self-conception among employees that unlearning some of the favorite behaviors that are no longer relevant to the operational context is meaningful to one's job success (Ekpenyong, 1999).

With the current increase in complexity and ambiguity in the operational contexts, it will be difficult to produce desired results unless managers learn to embrace reflection as a component for competence development.

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Corresponding author
Florence Nansubuga can be contacted at: flonansu@yahoo.com