Managing IT Integration in Accounting Education: A South African Case Study

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Abstract

This paper reports on the strategies, processes, difficulties and lessons learned by management managing the IT integration process. The necessity of higher education accounting programmes to include information technologies has long been established. The academic department implemented a new accountancy programme in 2020 with the purpose of embedding IT to a greater extent than other similar offerings in South Africa. The IT integration did not focus on educational technologies like Learning Management Systems as these were already in place, but rather focused on incorporating software technologies relevant to the accounting profession. This study is part of a larger research project, where the potential alignment from the triangulation of findings from lecturers, management and students will be analysed to add resilience to the design of an accounting IT integration educational framework. In 2024 we reported on the experiences from lecturers having to implement IT. Two cohorts of students exited the academic programme at the end of 2023 and 2024 which provides the ideal opportunity to critically analyse the strategies and processes followed, hindrances and intervening factors that led to course corrections, and lessons learned from all the relevant stakeholders in this IT integration process. Imperative to the success of this integration is the buy-in, strategies followed and management of the IT integration process. The findings from the interviews of managers will be presented in this paper where a convergent parallel mixed method research design was employed. Quantitative and qualitative data were collected from management responsible for overseeing the implementation process of IT integration. The insights derived from this critical analysis are poised to contribute to a framework to assist higher education institutions in sustaining the dynamic change of IT in accounting curricula to ensure accounting graduates remain aligned with the evolving demands of the financial sector despite disruptors (like COVID-19).

Keywords: *Accounting education, information technology, accounting curriculum, accounting programmes, management, integration*

1. Introduction

The necessity of higher education accounting programmes to include information technologies has long been established [1,2,3,4]. Accounting education needs to evolve to ensure that their graduates have both the skill and knowledge to be work ready as the world of work for finance specialists has kept pace with the dynamics of 4IR [5,6]. The academic department implemented a new accountancy programme in 2020 with the purpose of embedding information technologies (IT) to a greater extent than other similar offerings in South Africa. The IT integration did not focus on educational technologies like Learning Management Systems as these were already in place, but rather focused on incorporating software technologies relevant to the accounting profession. This study is part of a larger research project, where the potential alignment from the triangulation of findings from lecturers, management and students will be analysed to add resilience to the design of an accounting IT integration educational framework. In 2024 we reported on the experiences from lecturers having to implement IT [1]. This paper reports on the strategies, processes, difficulties and lessons learned by management managing the IT integration process.

1.1 Stages of Processes and Strategies Followed

Two cohorts of students exited the academic programme at the end of 2023 and 2024 which provides the ideal opportunity to critically analyse the strategies and processes followed, hindrances and intervening factors that led to course corrections, and lessons learned from all the relevant stakeholders in this IT integration process. Imperative to the success of this integration is the staff buy-in, strategies followed, and management of the IT integration process. The processes and strategies

followed will be presented in three stages. The pre-implementation stage (2018, 2019) focuses on; the management's perception of the relevance of the IT integration; the support received from institutional service departments and senior management; the sufficiency of the staff training; the necessity and provision of incentives. The implementation and post implementation stage (2022 onwards) includes, the steps taken to overcome the digital disruptions and challenges that were encountered due to the COVID-19 global pandemic, feedback and monitoring of the implementation process, influencing factors that were the impetus of the implementation, and management perceptions on the success of the integration. The final stage presented will be on the insights that could direct the way forward to ensure sustainability of the IT integration in accounting curricula for accounting graduates to remain aligned with the evolving demands of the financial sector despite disruptors such as COVID-19.

1.2 Academic Programme

To contextualize this study appropriately, it is essential to situate it within the academic framework in which the integration of IT occurred. The Department of Accounting and Auditing, housed within the Faculty of Management Sciences at the Central University of Technology, Free State (South Africa), introduced a new academic programme in 2020: the Bachelor of Management Sciences in Accountancy. This is a four-year, 517-credit professional degree aligned with Level 8 of the National Qualifications Framework (NQF) [7] and is delivered across two delivery sites—Bloemfontein and Welkom.

A distinguishing feature of this programme is its deliberate and strategic incorporation of IT as a core component, setting it apart from comparable qualifications offered nationally. This emphasis is explicitly articulated in the programme's rationale, which states: "...students will have to practically convert embedded knowledge into different software programmes relevant to professional accountants" [8].

Since the inception of the programme, it delivered two cohorts respectively in 2023 and 2024. This timing presents a valuable opportunity to critically examine the extent and effectiveness of IT integration within the curriculum, especially from a management perspective.

2. Research Methodology

2.1 Design and Subjects

Given the purpose of the study to collect detailed data on how IT integration was managed, the effectiveness of the implementation and lessons learned, a mixed method research design was considered appropriate. This research design was also used by researchers like Neerapan (2025 [9]) and Palak and Wallis (2009) [10] investigating similar themes as this study. The quantitative - and qualitative data collected was analysed separately and then triangulated to enhance the reliability of the interpretation. In summary, a convergent parallel type of mixed method research design was employed in this study.

The population of the study consisted out of managers who could exert direct control over the IT integration process in the programme. These managers are, in this study, defined as consisting out of the Substantive Heads of Department, Acting Heads of Department, Departmental Manager (at the Welkom delivery site) and the Dean of the Faculty for the period between 2018 and 2025. This timeframe includes two years prior to the implementation of the programme in 2020 as appropriate strategies, processes and preparations should have been activated in anticipation of the actual implementation of the new programme and its IT integration focus.

2.2 Instrument

A semi-structured interview of managers associated with this programme was used to collect data. This data collection tool contained a mixture of Likert-scale and open-ended questions which allowed the participants the freedom to express, in their own terms, their experiences on managing the integration of IT in the academic programme.

The protocol of this study was approved by the Faculty Research and Innovation Committee, and ethical clearance was obtained by the institutional Research Ethics Committee of the Central University of Technology.

Managers were invited to participate in the study via email. A face-to-face or Teams meeting was then scheduled with those that responded positively. Participants provided informed consent before the interview started. The interviews were audio-recorded and then transcribed. All contributions have been anonymised.

The qualitative data, obtained through the responses on the open-ended questions, were manually coded, and prominent themes then identified. The Likert Scale question in the interviews represented the ordinal quantitative data that were statistically analysed through mode and means and thus presented. After both these processes were concluded, data was triangulated, paying attention to convergence of emergent themes [4].

3. Analysis of Interviews

3.1 Profile of Interviewees

The profile of interviewees is presented according to the managerial category they occupied during the period 2018 to 2025.

- Dean of the Faculty of Management Sciences
  There was only one substantive dean during this period, which was included in the interviews.
- Head of Department / Acting Head of Department
  During this time there were 5 Substantive Heads of Departments or Acting Heads of Department. One has since left the employment of the university, and one declined to be interviewed. Another was temporarily appointed as Acting Head of Department but served most of the time as Departmental Manager. This respondent's interview was therefore included in the Departmental Manager Category below. The remaining two respondents were interviewed and their responses analysed.
- Departmental Manager (at the satellite campus Welkom)
  There were mainly two departmental managers during the period investigated. Only one was interviewed as the other manager transferred to another section at the university.

In this convenience sample, therefore a total of 4 (57%) out of the 7 individuals who served in a managing position, participated in the interviews.

Table 1. Interviewee Demographic Detail

Participant	AGE	Years Experience in Higher Education as Lecturer	Years Experience in Higher Education as Manager
P1	63	37	17
P2	39	8	3
P3	51	13	2
P4	45	21	2
		79	24

The participants' age ranged from 39 to 63 (mean =50) and has a combined Higher Education Experience of 79 years. Their average experience in management in higher education is however only 6 years (or 24 years collectively).

3.2 Pre-implementation Stage

Senior management's perception was that the IT integration was relevant as the accounting software programmes are needed by industry and that accounting graduates need to be comfortable and knowledgeable with the software packages. This concept is in line with the philosophy of the

University of Technology, so that the graduates “can hit the ground running” and that in-house on the job training by employers can be kept to a minimum. Middle management concurs that the IT integration was in line with the vision and mission of the university. Management said that, although the theoretical principles are important, IT integration should be integrated in every module throughout the duration of the accounting qualification. The costing and taxation modules should also be integrating the use of excel in the teaching and learning due to the ease with which the calculations can be performed.

Senior management argued that change cannot happen without the staff buy-in from the relevant department, faculty, sub-structures of senate, and senate, as the implementation needs to be compliant to the rules and regulations of the university. Once approved, the department would have institutional support from the planning and other support structures in the university. However, middle management maintained that the support of the senior management was not evident, and that institutional support was very limited - particularly from the IT department regarding the computer labs. Furthermore, there was no guidance or assistance from the curriculum development department concerning the incorporation of software packages into the accounting programme.

Management believed that the staff training was not sufficient. There was a once-off training session for all staff on the accounting software programme which was provided by the software provider. Management supported the need for training to be continuous and argue that once-off training is inadequate. The training was designed for software users in industry, and the staff were required to pass the industry certification exam. This training was sufficient for staff with recent and relevant industry experience where the skill set gained from their industry experience could be aligned to the software chosen for the integration. However, the training shortfall was evident for the staff with no, or no recent, industry experience where the connection between the accounting concepts and the practical implementation thereof was not evident.

All the management staff interviewed agreed that the teaching staff did not have sufficient knowledge of the chosen software. This software was also believed to be more complicated as it was chosen for its additional modules that could be integrated into other disciplines like costing and taxation.

The additional work required for the IT integration was treated as part of the normal workload and no incentives were offered. Senior management said that incentives should have been considered to increase staff motivation.

3.3 Implementation and Post-Implementation Stage

Management maintained that there was no institutional support during the implementation which commenced in 2020 which coincided with the COVID-19 lockdown period. The IT integration was part of the programme of the department and yet “staff struggled with the installation of the software on their laptops and in the computer labs”. So that means there was no dialogue or a proper communication between IT and our department.” The current situation wasted teaching and learning time due to unnecessary delays to get the computer labs up and running whenever there are updated versions of the software that needs to be uploaded.

Comments received include “Overall, senior management support is non-existent” and “there is no collaboration between the department and the support services”. In this regard, one head of department maintained that “We have to fend for ourselves for things to get done. Unfortunately, even when you go and find the relevant people, there's always a lot of red tape.”

The was no monitoring and no time limits set for the implementation process and therefore the possibility of any feedback, both positive and or negative, was non-existent. This was one of the contributing factors believed to have had a negative impact on the staff. Management agreed that, although the staff believed that the IT integration was necessary, the staff reacted negatively to the implementation of integration for the following reasons:

- no staff buy-in to the implementation process and it was considered an imposition
- no staff buy-in into the selection of the accounting software
- the staff felt “inadequately prepared” and did not have the time to implement the IT skills
- the staff felt that their concerns were not heard by management

- COVID-19 and the start of the implementation process added undue stress onto the limited resources available to staff and students especially as the computer labs were closed
- COVID-19 and the necessary move to on-line teaching and learning
- COVID-19 and the teaching and learning of IT from the software manual was difficult.

Management admitted that no steps were taken to assist the staff to focus on the changing culture of the IT integration and it is believed that there was no real effective handover to the incoming head of department. There were five new heads of department from 2018 to date. The implications of revolving managers have long been established. It includes (departmental) instability [12], reduced performance [13], strategic inconsistencies [14], low employee morale [15], cultural fragmentation [16], loss of tacit knowledge [17] and weakened accountability [18].

Another challenge of the IT integration for staff that was highlighted, was that during the implementation process substantial changes were made to the curriculum to obtain a professional body's accreditation. The lecturers were still struggling with the IT integration and there was then the added burden of uncertainty regarding the content of the subjects.

The factors that influenced the managers in the implementation drive was the realisation that the students needed the IT integration for their skill and knowledge to be aligned to the dynamics of the 4IR workplace environment. In the ensuing staff discussion to focus the staff on the IT integration, one staff member made several enquiries on the possibility of improving the IT integration and the possibility to allocate the teaching of the IT skill set to lecturers that were "passionate and capable" on the accounting software. These lecturers volunteered and took on the responsibility to teach the accounting software to the students on first to fourth year levels of the accounting qualification. This employee (lecturer) driven initiative rather than manager driven initiative can be powerful tools for innovation [19] and job satisfaction [20], given a supportive work environment [21] and managerial trust [22].

It was critical that the IT lecturers also had the theoretical knowledge of accounting, costing, auditing and taxation, to be able to incorporate the theory of these disciplines with the teaching of the software skill, in order that the training of the students be relevant, holistic and real-to life. It is however believed that this has not been achieved yet.

Consequently, management perceptions on the success of the integration were rated between a 1 and 3 on a 5 point - Likert Scale. This translates the responses from "no integration" to "moderate integration" of IT. Given the small sample size, a statistical mode could not be established for this ordinal variable.
One of the reasons cited for this low rating, was that there is no discussion or engagement among the colleagues in the department on how the integration could be improved. Middle management maintained that during COVID it was a "disaster" with the onset of on-line teaching and the closure of the computer labs. The students do not have laptops which meant that the IT teaching and learning was virtually non-existent. It improved after lockdown from 2022 when there were lecturers who volunteered to take the responsibility for the teaching of one accounting software to the students. IT is only offered in one subject, Financial Accounting. In this subject, the students have a total of six hours a week of contact time, of which 2 hours a week are dedicated to the teaching of this accounting software. However, even here alignment between the software and the "theoretical parts" are disjointed. The software is taught in an add-on manner and not integrated with the rest of the subject. In other subjects such as Taxation, Cost and Financial Management and Auditing, no considerable IT is taught to the students.

Most managers agreed that IT should be a separate subject over the whole period of the qualification and not just the 2 hours per week in Financial Accounting that have been allocated to the IT integration. However, one alternative offered was that two lecturers should be allocated to a subject. One which focusses on the theoretical knowledge of the subject and another lecturer with the IT skills and passion to transpose the theoretical knowledge in a computerised environment.

3.4 The Way Forward from Lessons Learnt

Insights that could direct the way forward to ensure sustainability of the IT integration

- It is important to stay in close contact with the department's industry partners to keep the integration relevant and up-to date as the 4IR environment for the finance specialist is dynamic.
- Make use of different industry-relevant software packages to incorporate different aspects from the different modules and in more detail to affect a holistic work readiness qualification.
- Students should have their own laptops as it's an important resource for success. It will also negate some of negative impact of disruptors like COVID-19. It was suggested that the financing of the laptops could potentially be part of the student fees.
- Ensure that the IT are integrated and clearly visible in each of the main subjects – Financial Accounting, Cost and Financial Management, Auditing and Taxation. Students should be able to see the link between the theoretical knowledge and the practical application thereof in a computerised environment.
- Consider one of the following two modes of IT integration:
    - A separate subject over the whole duration of the accounting qualification. This implies a specialist lecturer with knowledge of and can integrate the main subject areas of accounting, cost and financial management, auditing and tax with the relevant software packages. From the researchers' perspective, this may be a more holistic method given that the lecturer with the necessary interdisciplinary expertise is available or can be sourced.
    - Alternatively splitting the teaching responsibilities between the theory and IT parts in a subject. Although it may be a more fragmented approach, from the researchers' perspective, this may be negated by ensuring curriculum alignment between the two parts.
- Irrespective of the mode of integration, identify managers or champion(s) with IT knowledge and passion to lead the integration of IT in the different subjects. These individuals should be capacitated with the time, resources and senior management support to drive this initiative.

4. Conclusion.

This study's aim was to assess critically the approaches, processes, difficulties and lessons learned by middle management managing the IT integration process in an accounting program in South Africa. Within the dynamic 4IR environment, finance graduates need to be capacitated with the necessary IT skills and managers at Higher Education Institutions are responsible to manage the integration of these skills in academic programmes. This need for IT integration in all the main subjects was acknowledged by middle managers and they concurred that it aligns with the vision and mission of the University. Although managers concurred that staff buy-in was critical, no measures were taken to focus employees on this change, staff training on the software minimal, monitoring and feedback of progress lacking, no time limits set, and no incentives offered for the additional work of integrating IT. Further complicating the situation was that middle managers did not feel supported by the institution during the implementation and COVID-19 forced a move towards online teaching which had to be managed. As a result, management scored the overall implementation of IT very low, relegating it to an accounting software taught as an add-on in the Financial Accounting subject, without integration between theory and IT practices. Two options were proposed as counter for the current situation. IT should either be a separate subject in all four years of the qualification or two lecturers should be allocated to the main subjects. One lecturer inculcates the theoretical knowledge and another with the IT skills and passion to transpose the theory in a computerised environment.

The self-reported measures of IT integration is a limitation in this study. The nature of interviews, participants' subjectivity, geographical location and the small sample size limit generalizability to other populations.

Future research can repeat this study with other populations to aid generalizability and similar assessments of IT integration can be conducted from the perspective of students. This could provide valuable input into the creation of a comprehensive framework for the implementation of IT in accounting programs at Higher Education Institutions, ensuring 4IR-ready graduates.

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