EXPLORING BUSINESS SCHOOL STUDENTS' LEARNING EXPERIENCES – A TOC SYSTEMS-BASED APPROACH

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ABSTRACT

Successful quality improvement initiatives within a system require an understanding of the overall goal to which the collective effort of the system is directed. The system's goal can then serve as a benchmark against which to measure system performance, and such measures can act as indicators of *why* the system performance is non-optimal. The study reported in this paper, is part of a larger project involving students, lecturers and administrators of a Central African Business School (CABS). This paper demonstrates the use of the theory of constraints (TOC) systems-based meta-methodology, and the associated TOC thinking processes (TP) logic tools, to surface the implicit goal of learning within CABS; to identify root causes of the less than desirable learning experiences that impact negatively on achievement of the learning goal; and to propose how to address dilemmas associated with the critical root causes in order to pursue goal achievement.

Key words: Business School, Learning Goal, Undesirable effects, Dilemma, TOC

INTRODUCTION

In the recent past, much research has been conducted focusing on students' goals as motivational aspects of their learning. Indeed, there is abundance of research on the various types of goals and the theories related to goals in education. Recent studies that have explored the role of goals in driving student behaviour in academic settings include those underpinned by achievement goal theories (Levy-Tossman, Kaplan, & Assor, 2007; Pintrich, Conley, & Kempler, 2003), and others related to performance-approach goals (Barron & Harackiewicz, 2003; Elliot & Moller, 2003). Yet other studies have sought to relate students goals to self-regulation in classrooms (Lemos, 1999), while some have examined the congruence between students' goals and teachers' goals (Spera & Wentzel, 2003). Whilst these latter studies have explored goals with respect to academic motivation and achievements, their main focus has been grade nine and high school students rather than tertiary students.

Despite such research on students' goals, problems in learning and teaching (L&T) remain. Noticeably, few researchers have explored students' learning goals in a higher education (HE) context from a systemic perspective, and fewer still have examined the impact of less than desirable experiences of learning on achieving the learning goal. As a consequence, in taking a systems perspective, and in choosing to view L&T as a sub-system within a HE institution system, it becomes important to first establish a common understanding of ultimate purpose of the L&T sub-system (Dettmer, 2011).

This paper, which is part of a larger study involving students, lecturers and administrators of two Business Schools, seeks to identify the goal of learning and the causes of the less-than-desirable learning experiences that impact negatively on the achievement of the learning goal. The paper draws on the views of students from one of the two schools in the wider study, and applies the theory of constraints (TOC) methodology and the thinking processes (TP) logic tools to identify the learning goal and then to focus on the few main causes of undesirable factors that impact negatively on the learning goal. Through the use of effect-cause-effect logic, the root causes of the less-than-desirable experiences are identified. TOC emphasises not just the need to focus on these core causes, but also the need to address them; and it also recognises that the situation will not necessarily be improved just by improving other parts of the system. The intention of this paper, then, is to demonstrate how TOC may be used to identify root causes, and to propose ideas to resolve the dilemma(s) behind the root causes.

THE THEORY OF CONSTRAINTS (TOC)

The Theory of Constraints (TOC) is a system-based management philosophy that was developed by Dr. Eliyahu Goldratt and was popularised through his novels such as *The Goal* (Goldratt & Cox, 1992) and *It's not Luck* (Goldratt, 1994). The TOC is based on the premise that every system has a goal and that very few factors or constraints often limit a system's performance at any given time. Therefore, TOC focuses on the constraint that prevents a system from achieving its goal. In this paper, in order to identify the constraints that hinder the achievement of the learning goal, the TOC methodology is used.

THE TOC METHODOLOGY

TOC is a systems-based meta-methodology with a set of tools and methods that are used in complex situations as as a set of problem-solving interventions that move through the stages of problem structuring, diagnosis, solution development to implementation (Mabin, Davies, & Kim, 2009). These tools are collectively known as the Thinking Processes and comprise five logic-tree diagram processes and the Evaporating Cloud (EC) or conflict resolution process (see Dettmer, 2007).

In this study, TOC methodology was used in the design of the discussion guide used in the focus group (FG) interviews with the students, and in design of the interview guide used with lecturers and senior managers of the two business schools. The discussion guide provided a means to identify the goal of learning, the critical success factors (CSFs) for achieving the goal, and the necessary conditions (NC) needed to underpin achievement of each of those factors. The guide also focused on identifying the symptoms that limited the effective achievement of the learning goal.

The Thinking-Process (TP) logic tools

Three TP tools were used in this study; the goal tree (GT), the current reality tree (CRT) and the evaporating cloud (EC).

1. The goal tree

In order to be clear about whether , and if so, why change is needed, *a goal tree* was used to state the students' ultimate goal of learning and then to map the conditions required to achieve that goal. Specifically, we represent this as a hierarchy of the CSFs (Dettmer, 2011). Dettmer (2011) argued that 'a well-defined goal and its critical success factors provided the benchmarks for deciding the parts of the system that needed attention'.

2. The current reality tree

After the construction of a Goal tree, achievement gaps were identified by participants along with other symptoms or problems, referred to as 'undesirable effects' (UDE's). The CRT was used to depict a chain of effect-cause-effect relationships between the factors that limited the achievement of students' learning goal leading down to the *root causes* of those limiting or constraining factors.(Davies, Mabin, & Balderstone, 2005). In order to construct the CRT, factors that negatively impacted on learning goals or were symptoms of not meeting the goals, were identified. From these factors, a set of undesirable effects (UDEs) were determined (Cox, Boyd, H, Sullivan, Reid, & Cartier, 2012). The UDEs were then connected together through a logical chain of cause and effect to the *root cause(s)* guided by use of a logic-testing process invoking use of the Categories of Legitimate Reservations (CLR).

The CLR consists of rules or tests that clarify or verify the cause and effect logic in terms of challenging the clarity, existence of the cause and effect, or 'if…then', relationships; sufficiency of the cause to produce the effect; possibility of cause-effect reversal; or existence of circular logic. In this study, the finished CRT was used to provide a logical explanation of how the root causes currently lead to under-achievement of the students' goal of learning. Then, using understanding gained from the extensive CRT, a focused *f*CRT is developed with emphasis on only a few core UDEs (Ronen & Pass, 2008). *Flying Logic* software, specifically designed for constructing the thinking processes logic trees, was used to construct both the CRT and *f*CRT logic diagrams.

3. The evaporating cloud

An Evaporating Cloud (EC) is a core tool in the set of TOC thinking process tools; its chief purpose is to resolve a conflicting situation or *evaporate* a dilemma. In the TOC, the presence of UDEs in a system is often interpretreted as an indicator of the presence of conflicts or dilemmas (Dettmer, 2007). In trying to resolve dilemma, the EC process portrays conflict as being two opposing sides, positions or actions. The conflict or dilemma is assumed to be rooted in the hidden or implicit assumptions of each side. The EC process helps to surface the assumptions of each side, and then to question their validity through exploration of ideas that can then be converted into actions or solutions to the seemingly complex situation. The intent is always to lead to a win-win solution (Dettmer, 2007).

THE RESEARCH DESIGN

This study adopted a qualitative research approach to investigate the experiences of students, lecturers and senior administrators of two Business Schools (Kenya and New Zealand). The study also adopted an interpretivist view based on the ontological assumption that realities are multiple, constructed and embedded in individuals contexts (Pickard, 2007). The part of study presented here is based on undergraduate students learning experiences in Kenya. The sample frame / total population of students was 7,750. Purposive sampling was used to identify those who would be representative of different categories of students within the Business School.

DATA ANALYSIS AND FINDINGS

The findings of this study are based on data collected from five focus groups (FGs) of undergraduate students. The five groups comprised different categories of students namely: full-time government sponsored students, full-time self-sponsored students, part-time self-sponsored students, international students and student leaders. The students were at different years of study, ranging from 1st year to 4th year of the Bachelor programmes. A total of 33 students participated in the study.

The learning goal

During the focus group (FG) discussions, each of the students within the five FGs identified their individual learning goals - shown in Table 1.

Table 1: The identification of the learning goal(s)

Focus Group	KM1	KM2 (FT)	KIS	KSL	KM2 (PT)
Consensus goal	To be a well-rounded mature responsible graduate with necessary knowledge & skills needed in the job market and by the society	To attain the necessary managerial and social skills and knowledge for practical/technical application	To get the knowledge and exposure that may transform my life positively	To become a well-rounded person in business skills and talents	Get knowledge, ideas & skills that might help in the job market or in self-employment.

In order to move to the next step of identification of the critical success factors (CSF) and subsequent necessary conditions (NCs) for each factor, a consensus goal was sought in each group. In order to do so, each of the five FGs constructed its own goal tree during focus group discussion. The process of analysis undertaken by the researchers, following the FGs, then involved consolidating these five goal trees into one. Two major steps were involved:

1. *Unitisation of the consensus goal*

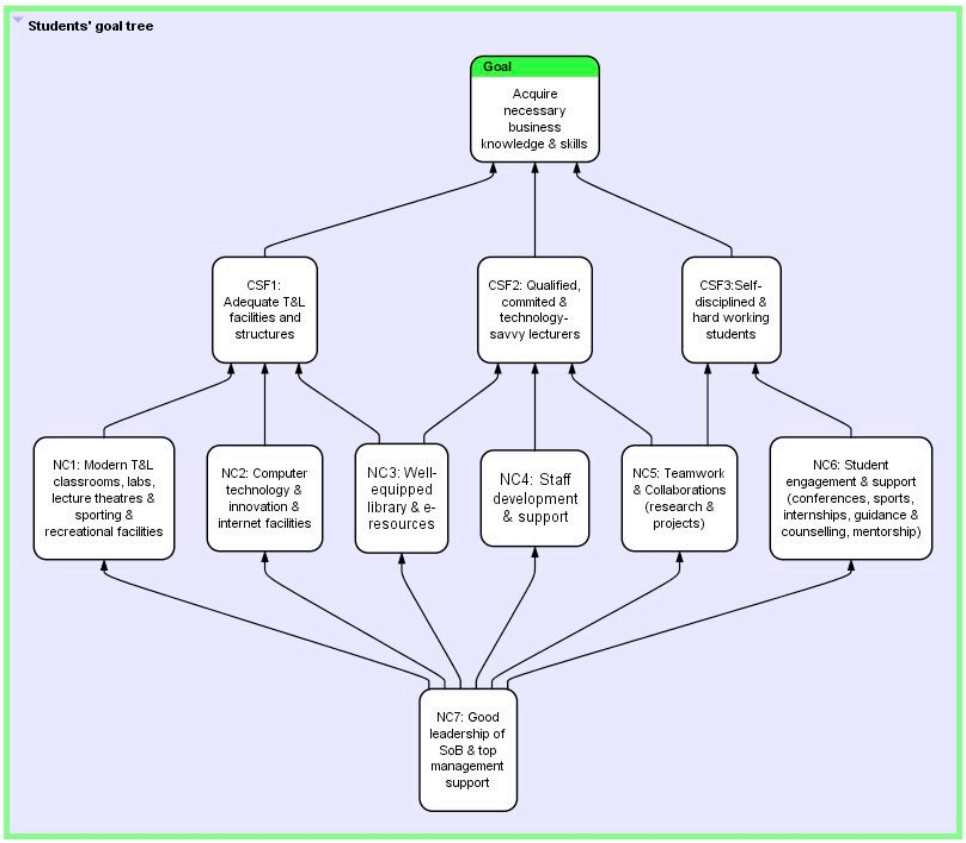
The first step in the consolidation process was the unitisation of the separate consensus goals drawn from each group. The analysis of the five consensus goals' yielded a common goal of *'acquisition of business knowledge and skills'*.

2. *Unitisation of the CSFs and the NCs*

After identifying a common goal for all five groups, the next step involved unitisation of the many CSFs and the NCs for all groups. The unitisation process resulted in three factors namely: (1) Adequate L&T facilities and structures, (2) qualified committed and 'techno-savvy' lecturers, and (3) Self-discipline and hard-working students. Seven NCs were identified as shown in Figure 1.

In summary, students perceived the need for (1) modern L&T classrooms, labs, lecture theatres, sporting and recreational facilities; (2) computer technology & innovation and internet facilities; (3) well-equipped library and e-resources; (4) staff development & training; (5) teamwork & collaboration; (6) student engagement and support; and (7) good leadership of the school

Figure 1: Students' Goal Tree



Identification of the problems that affect the quality of learning experiences

Students identified many undesirable issues within their learning environment relative to their learning goal of *'acquiring relevant business knowledge and skills'*. In order to qualify for further analysis, these issues were reduced into undesirable effects (UDEs) using an UDE protocol (Cox, et al., 2012). The identified UDEs are shown in Table 2.

Table 2: Undesirable effects (UDEs) identified by students

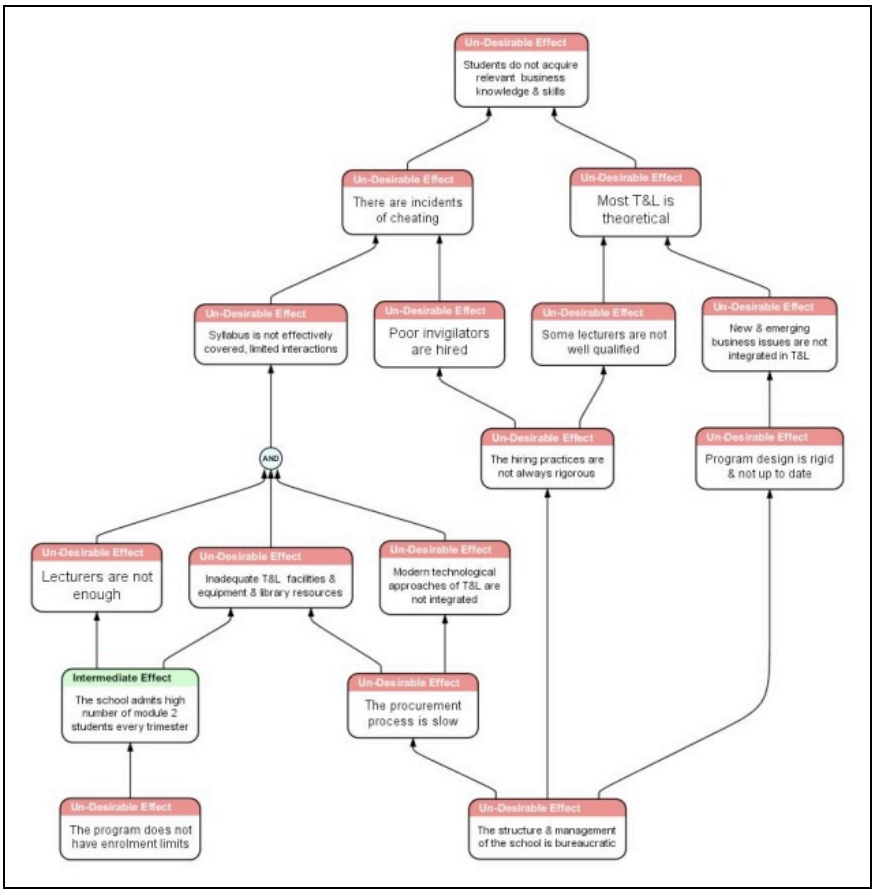
1	There are not enough lecturers
2	The structure and management of the school is bureaucratic
3	There are incidents of cheating and collaboration in exams
4	There is limited interactions between students and lecturers
5	There is no team work among students
6	New and emerging business issues and practices are not integrated in L&T
7	Modern technological approaches of L&T are not integrated
8	Most L&T is theoretical
9	The hiring practices of academic staff are not always rigorous
10	Students numbers in most classes are very high
11	L&T facilities and equipment are not adequate

After the identification of the UDEs, the next step was to construct a current reality tree (CRT). A CRT is defined as a thinking process, sufficiency-based logic diagram that facilitates the answering of the question of 'what to change' by illustrating the cause and effect relationships between the core problem and the undesirable effects in a system (Dettmer, 2007). From the CRT, a *focused f*CRT was constructed (Ronen & Pass, 2008).

The *f*CRT identified two critical root causes that accounted for most undesirable experiences of students as shown in Figure 2.

i) The Bachelor of Commerce program does not have enrolment limits
ii) The structure and management of the school is bureaucratic

Figure 2: *f*CRT for Students



The fact that the Bachelor of Commerce (B.Com) program did not have enrolment limits was identified as a critical root cause of students' undesirable experiences. Despite its constrained resources, in terms of learning and teaching (L&T) facilities and equipment, and less than adequate numbers of lecturing staff, the School continued to admit high numbers of fee-paying undergraduate students every trimester.

The high number of students and the inadequate L&T facilities then compounded problems in providing adequate student learning support such as tutorials, mainly because the numbers of classrooms/classroom space, and the numbers of tutors, were not sufficient to cater for the higher student enrolment. It was also alleged that the unavailability of modern interactive technologies within the available L&T facilities limited classroom interactions.

> *Poor uptake of technology makes learning process to be very slow, making the communication between students and lecturers very slow as well as the grading system. Limited use of technologically enabled illustrations/diagrams limits understanding. It Limits opportunity to create discussion forums… (KM1).*

Moreover, interactions and consultations outside classrooms between lecturers and students were supposedly limited by the unavailability of lecturers as the following typical statement affirms.

> *In most of the cases, the lecturers are not usually available. After the class you will never see them again until they come back to class (KM1).*

Apparently, most lecturers had many course units to teach every trimester with a high number of students in each course unit. As a result, most lecturers were overloaded. This implied that most lecturers not only failed to find time to improve on the quality of their teaching but they even failed to conduct all the lectures.

> *Poor time keeping by lecturers de-motivates students from attending classes. If a lecturer is late for 2hours, the next lecture you might fail to attend and that might affect your learning... Learning is delayed so you lag behind in curriculum…Increases stress levels of students in that during the end of semester you are bombarded with lots of hand outs, assignments, and yet there was time to do all that... It sets bad example to students yet lecturers should act as role models to us. Now when they come to class late, we also start doing the same.. .hinders students' concentration in that you came prepared for a lesson and then the lecturer delays, so you switch off to other things like internet...It compromises their professionalism (KM1).*

Due to missed classes, students complained that the syllabi were not always effectively covered. Moreover, due to limited learning resources and learning support, most students failed to acquire the goal of 'gaining relevant business knowledge and skills'.

On the other hand, the structure of the school was perceived to be bureaucratic. This tended to slow the procurement processes resulting in delays in the acquisition of L&T facilities and equipment, as well as library resources. The bureaucratic structure also implied delays in program re-design and review. This implied that the program failed to reflect on the current and emerging business practices. As a result, students felt that their learning was not up to date as the following phrase indicates.

The information that lecturers provide is very stale, not updated. It is expired. Some ... is irrelevant (KSL).

The situation was made worse in some courses where some lecturers were perceived not to be well qualified in teaching, perhaps due to poor hiring practices or lack of appropriate training. Most teaching also tended to be more theoretical than practical. The theoretical approach to teaching then implied less practical or application-based forms of assessment, with for example, limited use of case studies or questions that required critical thinking. Allegedly, text-book based exercises and assessments tended to encourage rote learning as well as cheating. Moreover, due to poor hiring practices for invigilators, cheating tended to thrive within the School. Unsurprisingly, some students also resorted to cheating malpractice, because they lacked confidence probably because the syllabi were not effectively covered and also because they failed to understand some concepts clearly. As a consequence, students often failed to acquire relevant business knowledge and skills or their goal of learning.

Resolving the Dilemma

As indicated earlier, this study was part of a larger study involving students, lecturers and administrators of a Central African Business School (CABS). As such, the root causes identified by the three groups of participants were then consolidated to identify the core cause(s) of UDEs in the school. Although students identified two root causes (the high enrolment and the bureaucratic structure of the school), upon consolidation with other root causes derived by the other two groups, high student enrolment was traced back to limited government funding. (For highlights on the resolution of the limited government funding dilemma, readers are referred to Kimani, Mabin & Davies, 2014). Given limitations on time and space, this paper continues with a focus on the dilemma of bureaucratic university structure, a matter which had also been identified as a critical root cause by the administrators of the school. The paper demonstrates how the evaporating cloud (EC) process of TOC may address the dilemma.

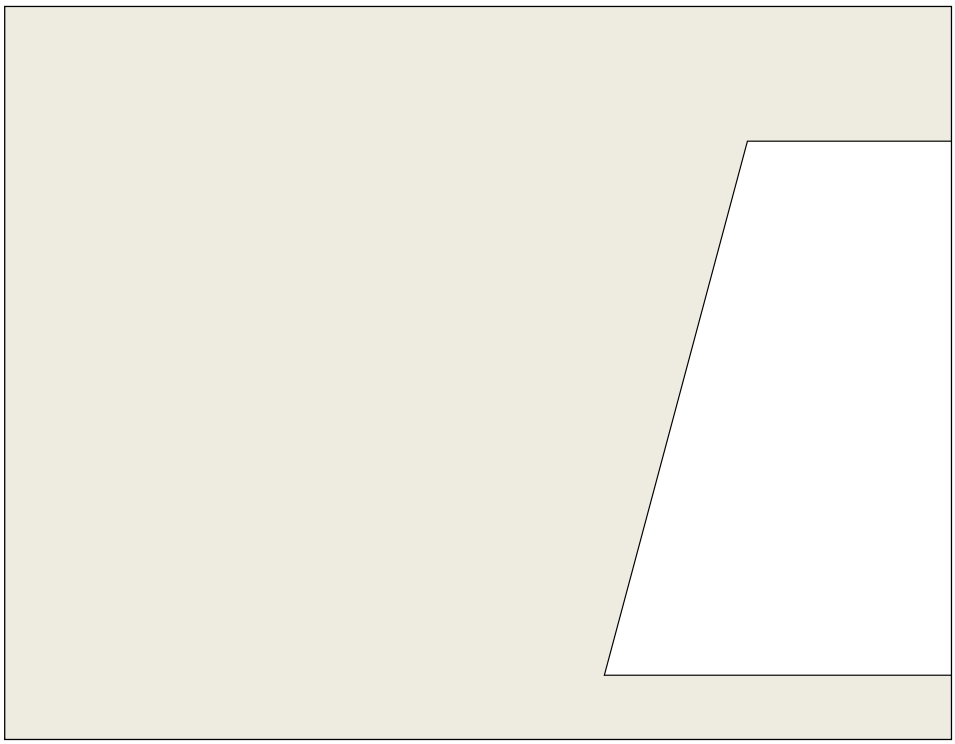
Identification of the bureaucratic structure as a *root*-cause was associated with, and implicated by the university's slow procurement processes and slow program review, as well as the rigid design of the B.Com program. Indeed, students blamed the bureaucratic structure for University responses and delays in attending to their needs, as is evidenced by the following statement.

> *Bureaucracy is bad when you are told that this has to go through this process. So there are long bureaucracies in attending to students' needs/concerns such as the gym, basket-ball courts, swimming pools. The process is that students have to complain to student leaders who then go to the immediate relevant department, who then write letters to the Dean of the School, who writes to the school-principal CHSS- relevant DVC- senate–government. By the time it goes through this process, the student is doing masters (KSL).*

The dilemma of bureaucracy is depicted in Figure 3. This EC is a 5 box {A, B, C, D, D'} diagram created in the following steps:

1. Identify the undesirable action that is currently forcing students to be in the dilemma situation. In this case, it is '*University has a bureaucratic and centralised management structure*'. This is put in box D.
2. Identify the desired opposite of the complaint. In this case, '*Use a decentralised management system at the School of Business-CABS'*. This is put in box D'
3. Identify the need that is satisfied by the action in box D or the reason why we put up with action D. This is identified as *'Ensure efficient & fair use of funds within the university'*. This is put in box B.
4. Identify the need that is satisfied by action in box D' or what does D jeopardise? This is identified as *'Ensure effective L&T delivery at CABS'*. This is put in box C.
5. Identify a common objective of having BOTH B and C. This is identified as *'Ensure effective & efficient management of the CABS'*.

Figure 3: EC on the Bureaucratic Structure



The EC is read from L to R, providing a process to check logic in a systematic and systemic manner:

> In order to ensure *effective & efficient management of the CABS,* University *must ensure it has efficient & fair use of funds across the university ... and* in order the university *to have efficient & fair use of funds across the university, it must have a centralised management structure*.
> On the other hand, in order to ensure *effective & efficient management of the CABS,* University must ensure *effective L&T delivery at CABS, ...* and in order to ensure *effective L&T delivery at CABS,* University must *use a devolved management structure*. Hence, the conflict arises.

Assumptions underpinning each of the arrows are then surfaced. They will include both valid assumptions, and invalid ones which can be challenged.

For example, for arrow B-D, we read, In order to ensure *effective & efficient management of the CABS,* University must ensure *it has efficient & fair use of funds across the university, ...* and in order for the University to have *efficient & fair use of funds across the university,* it must have *a centralised management structure,* **because**:

1. Centralisation ensures uniformity of processes/procedures across the University.
2. Uniformity of procedures ensures adherence to University set standards as well as to ISO procedures.
3. It is more efficient to run a University from a centralised system.
4. Centralisation ensures support of financially weak faculties leading to equitable distribution of university resources.
5. The CABS is a cash-cow; it needs a lot of control.
6. Decentralisation of CABS will lead to embezzlement of funds.

At the same time for C-D', in order to ensure *effective & efficient management of the CABS,* University must ensure *effective L&T delivery at CABS, …* and in order to ensure *effective L&T delivery at CABS,* University must *use a devolved management structure,* because:

1. Students complain about delays in decisions relating to the provision of their learning needs.
2. Students complain about outdated program design, outdated library books, lack of books and learning materials.
3. Decentralisation will lead to quick response to students' changing needs.
4. Devolution will lead to effective operation of the CABS.

We then generate ideas or ***injections*** that challenge or break these assumptions, and which can then be explored as solutions to resolve the dilemma. The injection suggested here, is to have a devolved management structure where the various schools of the university could be empowered to operate autonomously as Strategic Business Units (SBUs) whilst working together to share experiences, expertise and best practices across the university, eg:

1. University top management could assume high level responsibility of executive directors.
2. CABS could be allowed to operate independently (autonomously) as a 'SBU'.

Thus, the many aspects of the Schools' day to day operations could be reported directly through a board to the executive directors of the university, who would include the Finance director. Such reporting could be through monthly board meetings where senior management of the various schools/faculties, regular cross-schools/faculty forums share experiences and best practices across schools and about the schools'operations. Moreover, other meetings could take place (weekly, monthly, and bi-annual) with senior managers responsible for the key centralised functions, with a brief to to look pan-university synergies and growth opportunities.
These and other ideas could thus be evaluated as a way of resolving the conflict with a possible win-win solution.

CONCLUSION

This case study, set in a central African business school, has provided opportunity to demonstrate how the TOC-Thinking Processes can be used to effectively identify the *de* facto or *implicit* goal of learning in a HE institution. In related manner, the core problems impacting negatively on students' experiences of learning are identified through an effect-cause-effect logic diagramming process. These core problems are identified as the core areas on which management of the University needs to focus attention in order to materially improve student experiences of learning, progress in learning, and achievement of the goal(s) of learning. In order to do so, the paper demonstrates how the EC process may be used to better understand any dilemma(s) caused by and underpinning the core problems, and then how to resolve those dilemma(s) by guiding exploration of possible ideas, initiatives or *injections* that might lead to effective and desirable outcomes and goal attainment.

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