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An Expertise-Oriented Evaluation of the Center for Entrepreneurship Development and Vocational Studies, Federal Polytechnic, Ado-Ekiti, Nigeria: Implications for Assessing and Improving the Federal Polytechnic System in Nigeria

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Abstract

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Keywords

academic program reviews, post-secondary education, technical education, tertiary education, federal polytechnics

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Abstract

An on-campus evaluative study was conducted at Federal Polytechnic's Center for Entrepreneurship Development and Vocational Studies in Ado-Ekiti, Ekiti State, Nigeria. One of the evaluation objectives was to conduct an intensive on-site program review. Both quantitative and qualitative program-related data were assessed and a process evaluation was conducted. The aquaculture skills enterprise area was in highest demand by full-time students in both diploma programs, while soap making was in highest demand by part-time students. Data revealed that students scored highest on their final exam in the fourth-year skills training course (Practical Skills Training) and lowest in the first year theory course (Introduction to Entrepreneurship). Federal Polytechnic offers a National Diploma and a Higher National Diploma program. The Entrepreneurship Education program offered by the Center is core requirement of every student regardless of major. Students enroll in a theory course followed by a skills acquisition or laboratory course each academic year. Skills acquisition courses are offered in 15 small-business enterprise areas. A number of themes emerged from the qualitative data regarding the curriculum and program management and operations. The authors conclude with a process-based critique of the program review, with implications for future reviews in the Federal Polytechnic system. The Entrepreneurship Education program is in its fourth year and is considered a flagship program by national experts in Nigeria.

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Introduction

Expertise-oriented evaluations predate all other types of formal, public evaluation. Fitzpatrick, Sanders, and Worthen (2011) stated “as its name implies, it relies primarily on professional expertise to judge the quality of an institution, program, product, or activity” (p. 127). An on-site review of Federal Polytechnic’s (FP’s) Center of Entrepreneurship Development and Vocational Studies (CEDVS) in Ado-Ekiti, Ekiti State, Nigeria was conducted June 9 - July 1, 2014. The review was facilitated by Winrock International and was sponsored by the United States Agency for International Development (USAID). To provide context to this evaluative study, the authors will present background information on general challenges to Nigeria’s tertiary education system and conclude with issues related to food insecurity.

Tertiary Education Challenges

Not unlike most countries in Sub-Saharan Africa, tertiary education in Nigeria faces a number of challenges. According to *Higher Education in Africa* (2008), Nigeria, like many commonwealth countries, has not fully made the transition from a colonial system, designed to prepare public servants, to a tertiary education-system preparing a workforce with 21st century skills. Thus, curriculum reform has been recommended by many agencies and organizations (Board for International Food and Agricultural Development, 2014; USAID, 2014).

Yet another factor that challenges tertiary education in Sub-Saharan Africa is greater demands being placed on a system by gains in basic education (Higher Education in Africa, 2008). Large numbers of incoming students have created faculty shortages and have overburdened physical resources on many campuses. At a time when electronic instruction could provide

much-needed relief on the system, many African institutions do not have dependable electricity, adequate bandwidth, institutional support systems, or adequate faculty preparation in electronic instruction (USAID, 2014).

Finally, there is a need to enhance academic leadership to build institutional capacity at the highest levels. The U.S. House of Representatives Subcommittee on Africa and Global Health stated; “[s]ome areas where African institutions need particular assistance is in strategic planning, market research and advocacy, research management, financial planning and management, human resource management, and performance management” (*Higher Education in Africa*, 2008, p. 24). Buffett (2013) suggested many public administrators have inadequate managerial-level preparation. Thus, engaging academic leadership is essential in the program improvement process. Palomba and Banta (1999) contended assessment is institutional-centric. Definitions and processes used at one institution may not work well at another institution. Consequently, it is essential to engage academic leaders early and often in the process of making evaluative judgments.

Food Security Issues

It is important to note Nigeria is home to 9% of the global poor (United Nations, 2014). Buffett (2013) warned a Green Revolution model will not work in Africa and continued by suggesting Brazil could perhaps be used as a prototype. Brazil engaged marginalized farmers successfully in addressing the nation’s largest food insecurity issues. The Board for International Food and Agricultural Development (2014) recommended future interventions in Africa focus on the needs of farmers, small businesses, and local communities.

Operational Framework

The operational framework for this evaluative study is based upon work by Mets (1997) and Paloma and Banta (1999). Mets (1997) recommended a process for program reviews, as well as critical success factors, and potential outcomes. Paloma and Banta (1999) also set forth best practices for potential program outcomes. A summary of the program review theory is presented in Figure 1.

Mets (1997) recommended program reviews include an institutional council and related subcommittee of academic and nonacademic staff, unit self-studies, external reviewers, administrative meetings, annual updates, and two- or four-year follow-up reports. Mets continued by suggesting a

number of critical success factors: leadership commitment, communications, and the integration of program review with budget, planning, and assessment processes. Finally, Mets revealed the following outcomes of program reviews: revolutionary program change, program redefinition, institutional redirection in mission which may or may not include the program in question, administrative reorganization, and/or program renewal. Paloma and Banta (1999) reported evaluation results can vary from modified/restructured coursework to the emergence of new programs. However, in many cases, there are more subtle modifications apparent only in the due course of time.

Process	Outcomes
1. Program Review (PR) Council 2. Internal Self-Study 3. External Review 4. Admin. Meetings	Program/Curriculum Changes Program Redefinition Institutional Redirection Emergence of New Programs

Figure 1. Operational framework for successful program reviews (Mets 1997; Paloma & Banta (1999).

Purpose and Objective

The purpose of this evaluative study was to utilize expertise-oriented evaluation to make a judgment on FP Ado-Ekiti’s CEDVS in Ekiti State, Nigeria. The objective of the evaluation was to conduct a program review of CEDVS.

Methods

Rossi, Lipsey, and Freeman (2004) asserted “a central task of the program evaluator is to construct a valid description of program performance” (p.16). Consequently, program evaluators draw on a

wide range of social science research methods in their decision making process. This section includes information on data sources for the program evaluation, criteria for assessing evaluation adequacy, research techniques, and an evaluation limitation.

Data Sources

This program review of the CEDVS is based upon data and information collected from the following sources: (a) personal and group interviews with internal and external stakeholders; (b) observations of classrooms, laboratories, and farm-related

enterprises; (c) observations (home visits) of small business start-ups by current and former students; and (d) analyses of quantitative enrollment and student performance data.

Another significant source of information was through review of official publications, both electronic and print, including numerous FP publications and CEDVS curriculum materials, the CEDVS online course portal and course template under development, and a recent National Board for Technical Education (NBTE) review of the CEDVS program.

Finally, this evaluation was informed through a review in the entrepreneurship education literature. However, it should be pointed out this literature was based predominately on degree-based programs in the Western world, which are delivered very differently than the EEd academic programs at Polytechnics and Universities in Nigeria, where EEd is incorporated into the college core for all majors. A more complete explanation of the CEDVS EEd program is presented in the Findings/Results section of this article.

Criteria for Assessing Evaluation Adequacy

As recommended by Fitzpatrick, Sanders, and Worthen (2011) the criterion to judge the adequacy of the evaluation included accuracy, utility, feasibility, propriety, and evaluation accountability. Accuracy involves the degree to which the information obtained is an accurate reflection of reality. To ensure accuracy, the lead evaluator used member checks (see more detail in the subsequent section) and included the Country Director from Winrock International, the CEDVS Director, and the FP Rector as co-authors of this article. Feasibility is concerned with the extent that the program review is realistic, prudent,

diplomatic, and frugal. To the authors' knowledge, this criteria has been met.

Propriety concerns both legal and ethical issues and protecting the rights of those involved. As a result of not having formal IRB approval, specific findings from human subject interviews will be inferred to general findings only. Individual group findings will not be reported. However, it should be pointed out the lead author has successfully completed IRB training and was sensitive to the treatment of individuals involved in the data collection phase of the evaluation.

Finally, to ensure evaluation accountability, the lead author conducted a workshop on program evaluation to the academic leadership at FP, as well as the academic staff and selected non-academic staff members. Topics for this presentation on June 13, 2014, included evaluation processes, program structure and circumstances, resources available for the evaluation, evaluator-stakeholder relationships, and evaluation questions and methods. Adequate time was provided for the participants to ask clarifying questions and to provide input into the FP program review process.

Research Techniques

The lead evaluator utilized a mixed methods approach for triangulation purposes (Greene, Caracelli, & Graham, 1989). The convergence of evidence from differing methods and traditions assisted the evaluation team in corroborating findings from the quantitative institutional data (enrollment trends and final examination scores) and subsequent qualitative traditions. The sequential (quant + QUAL) design (Morse, 1991) allowed the quantitative institutional data to inform the qualitative interview, observation, and content analysis data. The weighting (where QUAL is

capitalized) infers that the qualitative aspects of this study were more dominant than the quantitative aspects. The qualitative data were collected using standards of qualitative rigor including credibility, transferability, dependability (trustworthiness), and confirmability. Credibility was established through peer debriefing, where individuals were provided the data to determine if the reviewer considered the interpretation reasonable, given the evidence. Member checks were used to determine if the individuals who were interviewed agreed with what the evaluation team heard them say, in an effort to establish credibility. Transferability was established through descriptive adequacy or thick description of the data. As interviews were conducted, the evaluation team used cross-case comparisons to enhance transferability. An audit trail was established to document dependability. Intrarater agreement was also a strategy consisting of a code-recode process, where members of the evaluation team first coded, then came back and recoded the data and compared the two sets of codes. Finally, confirmability, or neutrality is the extent to which the research is free of bias in procedures and interpretations. The lead evaluator relied on an audit trail of documentation, triangulation and peer review for corroboration, and reflexivity for control of bias to ensure confirmability.

Limitation

An academic and nonacademic staff labor strike interrupted the full-time students' semester in October 2013, and the term was suspended indefinitely. Hence, there were no full time students on campus during the June 2014 site visit.

Findings/Results

The results for the program review will be presented in the following order: (a) an examination of quantitative enrollment and performance factors; (b) a thick description of CEDVS operations, facilities, and academic program; (c) a summary of the qualitative themes that emerged from the on-campus review; and (d) a critique of the program review process.

Analysis of Quantitative Enrollment/Performance-Related Factors

During the onsite review, the FP staff provided two sources of institutional data. The first source included enrollment data in CEDVS by skill acquisition unit for both the ND and HND programs, aggregated by student status (full-time and part-time). As was previously noted, full-time enrollment during the 2013-2014 Academic Year (AY 2014) had been suspended by a labor issue thus these data were not included in any of the subsequent analyses. The aquaculture skills acquisition area experienced the greatest enrollment demand by full-time students in both the ND ($M = 316$, $SD = 125$) and HND ($M = 254$, $SD = 53$) programs in AY 2012 and 2013. In terms of part-time enrollment, the soap making skills acquisition area experienced the greatest demand in both the ND ($M = 554$, $SD = 84$) and HND ($M = 96$, $SD = 29$) programs.

In an attempt to establish baseline thresholds for student performance, cumulative final examination data were randomly extracted for AY' 12 and AY' 13 in all the EEd courses, with the exception of the first two skills courses, from a cross-section of academic majors selected at random. These majors selected were Accounting, Mechanical Engineering, Science Technology, and Urban and Regional Planning. As a group, the students averaged 61.74 ($SD = 13.67$) on their

coursework (out of a total maximum score of 100). Students scored highest on their exams in *Practical Skills Training* ($M = 69.04$, $SD = 1.88$) and lowest in *Introduction to Entrepreneurship* ($M = 55.82$, $SD = 1.51$).

Thick Description of CEDVS

FP offers a National Diploma (ND), similar to an Associate of Applied Science in the United States. Generally, ND students participate in the required Student Industrial Work Experience Scheme (SIWES) program in the summer between their first and second years. In the SIWES program, students are placed by the Nigerian government in a paid internship related to their program of study. Part-time students generally complete the ND in three years.

The Higher National Diploma (HND) programs closely resembles the Bachelors of Applied Science and Technology degree in the United States. After obtaining of the ND, many students (85%-95% at FP) transition into the HND program after completing a one year industry work experience program. Under this one year program, students are neither placed nor paid but receive a form of allowance from the organization. Like the ND, the HND program is designed as a two-year program for full-time students and a three-year program for part-time students. It is not uncommon for HND holders to participate in a one-year post-baccalaureate program and to be admitted into a graduate or professional program in Nigeria.

In 2010, the federal government mandated the EEd program as a core requirement for all academic majors in Polytechnic institutions. It has since been required of all public tertiary institutions, although in many cases, the universities use a different delivery model. The rationale for the EEd mandate is to encourage graduates to begin their own businesses for job creation, in addition to, or rather than

obtaining a job after graduation. Admittedly, many of the knowledge, attitudes, skills, and aspirations (KASA) that graduates learn from their participation in the EEd program are transferrable to other areas of their adult life. Should the student be successful in a career in their diploma area of study (e.g. Engineering), and not begin a new business, their tertiary educational program must still be considered a success.

The EEd program at FP is designed as a series of two theory courses for students in their first through final year of both the ND and HND programs. All EEd theory and skill acquisition courses at FP are two semester-hour credit courses, requiring students in the HND program to enroll in 32 EEd semester credit hours in a typical 194 semester credit hour HND program (approximately 17% of the total course work).

Skill acquisition units at FP are available in the following units: (a) aquaculture; (b) apiculture; (c) snailry; (d) tie dye/batik; (e) soap production; (f) crop production; (g) poultry production; (h) simple electrical gadgets; (i) welding and fabrication; (j) ceramics and tiles; (k) bakery and confectionary; (l) ICT; (m) hospitality and events management; (n) fashion design; and (o) marketing/car wash.

The CEDVS has operated the farm as an auxiliary unit since 2013. The farm serves to supplement instruction, particularly in the bio-physical skill units. Under the CEDVS, the farm generated ₦500,000 in net profit in fiscal year 2013. Prior to this time, the farm operation was outsourced, and the Polytechnic did not receive additional revenue from its operation. At best, it was operated as a break-even enterprise, prior to being administratively assigned to CEDVS.

Control of farm operations by CEDVS is essential when it secures grant funding for a proposed Enterprise Village

(EV). Funding is being sought from World Bank, Central Bank of Africa, USAID, Small and Medium Enterprise Development Agency of Nigeria, Tertiary Education Trust Fund, and the Bank of Industries. EV will provide ₦ 1,000,000 for five recent graduates in each of the 15 skill units. This funding will be used as business startup funding, and participants will be selected through a rigorous screening process, based upon their likelihood for business success. Hence, a total of ₦75,000,000 is needed to launch the program at the desired scale. When the graduates have repaid their loans, the funding will roll over for use with another group of young entrepreneurs.

Over 1,200 ND graduates will soon complete their programs fully-equipped as entrepreneurs by having completed the entire sequence of courses. Thus, the timing of this program review could not be better for making evaluative judgments early in the life of the program.

Summary of Qualitative Themes

While some of the qualitative data collection processes were triage in nature (background/history), many were substantive. Findings will be presented in the areas of curriculum and center/program management and operations.

Curriculum. In terms of the curriculum, the theory courses are sound in concept and principles, well developed, student-centered, and sequenced logically with one-another and the related skills acquisitions courses. Employability skills are embedded within the content. Many stakeholders praised the content and its application in the program. They perceived that students learn that rewards come subsequent to hard work and focus. They also perceived that the program teaches self-efficacy, self-assurance, and self-confidence. Many individuals expressed that the

program taught students to positively appreciate the value of becoming one's own boss and the important role entrepreneurs played in contributing to the Nigerian economy by employing individuals who were out-of-work. The business-related skills that the program taught students, such as recordkeeping and business management, were also highly valued.

The program motto ("Think Big, Start Small") was known to all of who were interviewed and seemed to be well-inculcated by the internal stakeholders. The motto came up in almost every meeting and was presented on program shirts worn by faculty.

There were some suggestions made to improve the curriculum, including: (a) assisting graduates in accessing land and credit; (b) providing more value-added technology, in addition to the production of raw agricultural products; and (c) academic staff needed to be more encouraging to students, particularly to the first generation college students that the FP primarily serves. A question surfaced during the review in regards to the need to internationalize the curriculum, as many students of the future anticipated working across national borders in West Africa and beyond.

A great deal of variability was observed in available laboratory space and quality of laboratory equipment within the various skills acquisitions units. Although the Fashion Design laboratory is relatively modern in terms of machines, laboratory space to accommodate enrollment is very problematic. In contrast, the welding laboratory appears to have an abundance of space, but has too few arc welding machines, and those that it does have appear to be quite dated. Broad industry-level participation in the program would ensure the laboratory equipment is state-of-the-art for starting businesses, particularly in the informal sector.

The final item related to the physical location of the CEDVS central office. It is presently located on a corner of main campus, not centrally accessible. Particularly for full-time students, this would create a problem for those students on the opposite corner of the campus.

Program management and operations. One of the most impressive observations about CEDVS was its support by central administration. Most individuals who participated in the interview praised the FP central administration for its support of the CEDVS. This was impressive given the serious financial challenges with large-scale issues that the institution faces (e.g. labor relations, infrastructure (water and roads), energy stability and large-scale backup, and Internet accessibility). Internally, the CEDVS leadership was praised for its vision and ‘can-do’ attitude. This is particularly noteworthy given the challenges of the leadership in managing exponential growth in the EEd program.

A preponderance of the academic staff members hold dual-appointments with their primary disciplinary faculty and CEDVS. Many academic staff holding dual appointments expressed concern about their teaching loads not being adjusted when they become CEDVS faculty affiliates. They also indicated there appeared to be little extrinsic reward for their association with CEDVS. As previously mentioned, faculty were not provided centralized CEDVS offices, which can result in poor communications within CEDVS.

Although the CEDVS is able to secure adequate numbers of academic staff, current levels of maintenance and operational funding were insufficient. A relatively new enterprise to CEDVS, farm operations, was mentioned as a possible revenue source to supplement the maintenance and operational funding short-

falls. One final budgetary constraint was mentioned related to purchasing. All purchases were highly centralized, and the CEDVS was unable to make modest purchases without the approval of central administration. This accounting regulation slows the purchasing process for farm operations and was reported as being problematic.

Critique of Program Review Process

Formal program reviews and related best practices for conducting such reviews (see Figure 1) are not routine in the FP system in Nigeria. Hence, the process for sponsored USAID reviews to enhance capacity would benefit from the establishment of a more formal and systematic review process. For example, at FP, a comprehensive and systematic strategic planning process which includes unit- and program-level goals, objectives, critical success factors, and annual targets has not been established. In terms of the program review process, both Winrock International and FP representatives established a Scope of Work, complete with evaluation goals and objectives. However, prior to the on-site visit, there was no formal review council established, no pre-set agenda established for the visit, and no self-study conducted related to the project Scope of Work. This said, there was a sense of eagerness to learn and develop a more formalized process for adoption and use in subsequent years.

Conclusions, Implications, and Recommendations

In this final section, the authors will present study conclusions and recommendations for the FP CEDVS program, followed by transferrable implications and recommendations which may be applicable for all middle level tertiary schools in Nigeria. As in many

higher education institutions in Africa (USAID, 2014), FP has a nascent online presence. However, the CEDVS anticipates short-term demand by on-campus and off-campus learners. As such, FP's CEDVS should move incrementally, yet aggressively, in launching online courses when the technology infrastructure and centralized support services are in place. The Moodle-based platform under development will serve the CEDVS well in the future.

Overly-onerous bureaucratic regulations must not interfere with the education of students. Day-to-day business purchases under a certain ₦ threshold should not require approval higher than the Center Director level. Granted, all business transaction should be audited on a regular basis. The autonomy of managing organizational budgets is both complex and highly controversial. Responsibility-Centered Management budgets must include 'taxes' to pay for centralized services and include all fixed and variable costs and all revenue streams.

CEDVS academic and nonacademic staff should be provided office space in a centralized facility to build *esprit de corps* within the Center. Until a new building is constructed or an existing building is renovated dedicated for CEDVS use, the CEDVS office should be relocated to central campus both for greater visibility and student accessibility.

An independent assessment by a representative from the National Board for Technical Education (NBTE) was conducted December 7-8, 2013, prior to the program review site visit in June, 2014. The NBTE representative inspected the CEDVS facilities and engaged in dialogue with CEDVS staff. In his summary report, the NBTE representative stated that "... the institution is really on course toward the realization of the set out objectives as

provided for in the presidential directives..." (Kofarmatat, 2013, p. 3). Kofarmatat began the first recommendation by proposing: "The Board should consider the EDC (aka EEd) at Federal Polytechnic, Ado-Ekiti as one of the centers for excellence in Entrepreneurship Development Programme" (Kofarmatat, 2013, p. 4).

As a model program in Nigeria, the following implications and recommendations are forwarded to federal decision-makers. As a part of the general education core, the EEd program has rapidly emerged as a significant institutional trademark at FP. As suggested by Reich and Head (2010), the EEd program shapes student learning, values, and the entire academic environment. However, academic leaders need to keep in mind that the core should support, not discourage the "permeability of disciplinary boundaries" (Reich & Head, 2010, p. 70).

Cader and Norman (2006) remind their readers that in Africa, the informal sector has a great deal to contribute to the economy. They include both small and rural-based enterprises in their definition of the informal sector. They conclude by saying: "...we regard the informal sector as important as the formal sector, particularly in the current African context" (Cader & Norman, 2006, p. 278). In rural areas of the country, the EEd program core focuses almost entirely upon the informal sector, which makes it most unique.

A CEDVS-wide Advisory Committee (AC) should be established. The AC can 'ground' the entire curriculum in reality, provide insight in the expansion of new skill acquisition units, guide decision makers in purchasing the 'right' laboratory equipment for training, and keep the program updated with real-time trends and issues related to business start-ups.

Successful African entrepreneurship programs should encourage mentoring

(Cader & Norman, 2006). Social networks are incredibly important to the success of young entrepreneurs. These programs should also reveal significant constraints, including interference from authorities, lack of work sites, markets and competitors, and access to capital (Hann, 2001). Mentorship is included as a central component of the FP core, and in essence there is little doubt that in the fullness of time, program alumni will mentor future students enrolling in the program. CEDVS should continue to aggressively seek funding for the development and operation of the Enterprise Village concept on FP campuses across Nigeria.

It is important that stakeholders give new interventions like the CEDVS time to ‘work’ before substantial changes are made, and if changes are made, they should be evidence-driven. Having said this, the need for Extension has never been greater in Nigeria. In the future, a train-the-trainer certificate program that includes knowledge and skills in program development, implementation, delivery, and evaluation for non-formal learners should be developed by CEDVS. This certificate program would supply an adequately-trained workforce for the community-supported Extension services program that is being discussed.

Opportunities abound for partnerships with industry. Either a development officer should be added to the staff, or more nonacademic staff should be added in order to free-up current CEDVS administrators, so they can cultivate fundraising. Similar opportunities remain for marketing the program. Both electronic and print media should be utilized to build public support for the program. In the agricultural community, ‘first wave’ technologies (e.g. radio and local newspapers) are still important sources for information.

In terms of personnel, issues with labor are very concerning. Students must be placed at the center of all discussions. It is unconscionable to delay the education of students due to issues between management and labor. Additionally, biological laboratories should never be interrupted by social issues. Labor strikes must not interfere with continuous operations of aquaculture, cropping, apiculture, poultry or snailry units.

Academic staff teaching full-time loads for their home academic unit should be incentivized, either through additional compensation or by providing additional funding for professional travel, technology support, and/or classroom/laboratory support. Faculty development is crucial to student success in the business world. In a global society, consideration should be given to geographic location of students. The role of the CEDVS in business start-up beyond the Nigerian border warrants further consideration.

Academic leaders and stakeholders need to discuss the role of the program review in the larger context of program assessment. For example, program monitoring data are essential to informed decision making. Metrics should include student gender to facilitate reporting of gender by skill acquisition area. Although the authors acknowledge that U.S. standards for EEd program progress should be different from African standards, a recent U.S. and Canadian study revealed the top seven indicators of program quality assessment were: (a) courses offered; (b) faculty scholarship; (c) impact on community; (d) alumni exploits; (e) innovations; (f) alumni start-ups; and (g) outreach to scholars (Vesper & Gartner, 2007). Perhaps Buffett (2013) put it best: “[e]ach country must summon the particular will and discipline to invest in its own

people, own its own challenges, and benefit from its own success” (p. 408).

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