
INFLUENCE OF ENVIRONMENTAL FACTORS ON CHANGE OF PROGRAMME OF STUDY AMONG FIRST- YEAR UNDERGRADUATE STUDENTS

Mercy Wangechi K. Maina
Africa International University
P.O. Box 24686-00502,
Nairobi - Kenya
E-mail: mercy.gichohi@gmail.com

ABSTRACT

Purpose of the study: The purpose of this study was to investigate the influence of environmental factors on change of programme of study among first-year undergraduate students in Kenyan universities.

Problem statement: In Kenya, every year a significant number of high school students qualify for university education, but some are soon faced with the problem of changing their courses when they report to various universities.

Research methodology: The study method was quantitative, a cross sectional survey with a causal comparative study design. The study was conducted in selected seven (7) universities and sampled 398 first students' undergraduate students.

Findings: The findings revealed that environmental factors have a positive and significant influence on change of programme of study among first-year undergraduate students. KCSE mean grade, course cut off points, subject combinations and job prospects (opportunity to get a job) influence the decision to change programme of study among first year undergraduate students.

Conclusions: The study concluded that environmental factors have a positive and significant influence on change of programme of study among first-year undergraduate students in Kenyan universities.

Recommendations: The study recommended that universities should provide information on their accredited programmes of study and their career prospects. Employers should share labour market information regularly to help students learn about job market trends. High schools should network with universities and organize career days to share information on courses available and their requirements. The placement board should provide information on selection and placement processes on choice of university programmes of study to both students and teachers on a regular basis.

Keywords: *Environmental factors, change of programme, first-year undergraduate students*

1.0 INTRODUCTION

University education is the highest level in the learning process. Its purpose among others is to provide skilled human capital needed for the labour market, disseminate knowledge for social improvements and nation's economic development (Odhiambo, 2018). For universities to fulfill these responsibilities, university education is arranged into programmes of study and courses so that students can enroll in their areas of interest. Hence, students have an opportunity to expand their knowledge and skills, increase an understanding of their communities problems and solutions and build their future careers (Madanji, 2014; Burgess, Senior & Moores, 2018). A career is a series of jobs, occupations or professions pursued by an individual in their lifetime. It incorporates life roles, leisure activities, learning and work; either paid or unpaid (Zunker, 2006). For university students, a career is a factor they consider before choosing a programme of study or courses akin to either engineering, education, media or finance among others (Ooro, 2017). While choice of these programmes is a key decision-making activity among students, Gathigia (2011) acknowledges that for some, making that choice is a difficult task. Pabalinas (2015) agrees that many students cannot confidently choose causing indecision resulting in frequent changes of courses from one to another. Firmin and MacKillop (2008) confirms that change of majors or programmes of study is a common practice among many university students. This is a practice when a student makes an initial choice of programme of but changes that decision and makes a new choice once or multiple times (McMillan, 2005).

This practice has been documented in USA universities and reports indicates that between 50 to 75% of undergraduate students change their majors at least once before graduation (Foraker, 2012; Freedman, 2013; Enrolment Services, 2013; Astorne-Figar & Speer, 2017; Wright, 2018). In Kenya, the practice has not been studied widely except for a newspaper article by Ayiro (2016) who noted that about 20 to 50% of first year undergraduate students change their courses they had initially chosen. This is particularly so because students are admitted to the university with a declared choice of study.

1.1 STATEMENT OF THE PROBLEM

Programme of studies have long term economic consequences and need to be made with care. Failure to get a programme of study right the first time can be costly to the students concerned; their families and society at large. In Kenya, every year a significant number of high school students qualify for university education, but some are soon faced with the problem of changing their courses when they report to various universities (Maingi, 2007). While the change may not be a bad idea especially if it helps students use their talents, where change has negative impact, it has far reaching consequences. Among them it adds to cost of university education making it expensive for families especially if change occurs midstream in the course. It may lead to waste of taxpayers' money especially when university education is partly funded by the government (Ryan, 2017). Firmin and MacKillop (2008) added that it can delay in entering the job market for years. For Van Wie (2017), change of programme of study may cause delay in graduation. Other consequences are skills mismatch leading to either unemployment or underemployment. It can also lead to field of study mismatch characterized with graduates being employed in other fields in which they were not trained for. This costs employers to retrain such employees.

While global trends show that this practice is prevalence, but it has not been studied extensively in Kenya. This forms the motivation for this study; to investigate environmental factors that influence change of programme of study among first year undergraduate students in Kenyan universities.

1.2 OBJECTIVE OF THE STUDY

The purpose of this study was to investigate the influence of environmental factors on change of programme of study among first-year undergraduate students in Kenyan universities.

1.3 STUDY QUESTIONS

This study was directed by the following research question: To what extent do environmental factors influence change of programme of study?

2.0 LITERATURE REVIEW

2.1 Social Learning Career Theory

Social Learning Career Theory (SLCT) explains factors that influence career choices which are derived from programmes of study. The main factors are genetic endowments and special abilities, environmental conditions and events, learning experiences, and task approach skills (Zunker, 2006). This study investigated how environmental factors are influential in change of programme of study. Environmental conditions and events are conditions existing in individuals' lives and play a major role in what is learned and influence career development. They are usually beyond an individual's control (Krumboltz, 2009). Conditions such as economic climate, occupational opportunities, family resources, and educational systems influence occupational decisions (Kottler & Shepard, 2014). In this study, education system and government policies and labour market forces represented the main components under consideration. They were examined to establish to what extent they influence change of programme of study among first year undergraduate students.

2.2 Environmental factors and Change of Programme of Study

Environmental conditions and events in this study focused on educational systems and government policies and labour market forces.

2.2.1 Education System and Government Policies

Education system and government policies are factors that influence programme of study. These forms the environmental factors theorized by social learning career theory. They were divided into three parts: subjects offered in the curriculum, KCSE qualifying exam, course selection and cut off points.

2.2.1.1 Subject Combinations in Curriculum

Each year millions of high school students graduate and seek admission into higher education during their final year. Of great concern is these students' transition into higher education. Bangser (2008) and Tierney, Bailey, Constantine, Finkelstein and Hurd (2009) contended that high school education play a big role in preparing students for university education and careers. Eriksson et al. (2018) indicated that secondary school education prepares students for higher education by providing career guidance and support on choice of majors, courses and their subject requirements, clusters and combinations.

Tierney et al. (2009), Boland and Mulrennan (2011) and Xiao et al. (2016) studies supports that some schools provides information on subject combinations aligned to higher education admission, subject selection and college ready programmes. These have been found to improve choice of higher education and consequent programmes of study. In Kenya, the subject combinations sometimes referred to as subject clusters are provided for through Ministry of Education and Kenya National Examination Council (KNEC) guidelines. They provide twenty-nine (29) subjects which are arranged into five (5) groups. It from these groups students choose eight but graded on seven subjects by KNEC at the end of form 4 (KUCCPS, 2019).

According to Mukhwana et al. (2016), these groups of subjects are then used to match 1627 university bachelors' level programmes of study and courses. From this list, students make a choice on what programme of study to follow. Since the role of subject combinations and programmes of study has not been studied comprehensively, this study explored their role in change of programmes among first year undergraduate students.

2.2.1.2 KCSE Qualifying Examination and Grades

One of the considerations for students when making choice of programmes of study in universities is performance in entrance or qualifying exams (Skatova & Ferguson, 2014). According to Orr et al. (2017), most universities use high school grades, national matriculation exams, national entrance exams, national college examinations, university admission exams, portfolios or interviews. Depending on what each country considers as university admission criteria, students prepare themselves accordingly to meet admission requirements.

In Kenya, students access university education through a national examination called Kenya Certificate of Secondary Education (KCSE) which is administered by Kenya National Examination Council (KNEC). KNEC grades and generates students' mean grade so that they can apply for university education. According to the Commission of University Education, the minimum entry requirement for university education is mean grade of C+(plus) (KUCCPS, 2019). Individual student KCSE mean grade is therefore important when applying for courses offered in universities (KUCCPS, 2019). This study examined the influence of KCSE mean grade on change of programme of study among first year undergraduate students.

2.2.1.3 Course Selection Procedures and Cut off points

Selection and placement of students into universities is a process and not an event. It starts in schools with subjects' selection. The next process of selection is in university where students choose courses or programmes of study. This is dependent on students' grades because they determine their eligibility and placement based on university admission requirements. The process may cover a specific period of time or in some instances, the process can spread within the first year of university education (Orr et al., 2017). All these stages are guided by policies that govern the selection of students, tools of selection and placement procedures (Boland & Mulrennan, 2011). According to Machado and Szerman (2016), students apply to study in universities through various methods. The methods vary from one country to another, but the most common methods are centralized systems, decentralized systems, open systems, and blended systems. Kenya favours a centralized system. A centralized system is a mechanism of placing and admitting students into higher education through a clearinghouse (Machado & Szerman, 2016). Clearinghouses are organizations or bodies that coordinate applications, placement and admissions of students into the university through use of use national or entrance examinations (Boland & Mulrennan, 2011) and (Hafalir et al., 2014). Kenya's clearinghouse is the Kenya Universities and Colleges Central Placement Service (KUCCPS) (KUCCPS, 2019). Prutsch (2014) and Machado and Szerman (2016) indicated that it is favoured by many countries (UK, Nigeria, Ghana, Australia, Tanzania, China, Brazil etc) because of its improved coordination, wide coverage of geographical scope, improved equity in placement irrespective of students' socioeconomic background and uniform standards such as application fees. However its one disadvantage is that once the system is closed during the application cycle, change from one course or programme of study to another becomes difficult leading to increased student / course mismatch (Hernandez-Chanto 2016 & Wright, 2018). It may also be more difficult to change if admissions are pegged on scholarship or students' loan (Hastings, Neilson & Zimmerman, 2013) and (Orr et al., 2017).

Kenya's centralized admissions system, KUCCPS, selects and places students into universities through an online process that uses KCSE results, cluster subjects, merit, students' interests, Kenyan citizenship, affirmative action on gender, disability and disadvantaged regions (arid and semi-arid), available vacancies and current year of national examination (KUCCPS, 2014). The placement process is a journey that starts first with appropriate information on number of students each university can accommodate (capacity), the previous course cut off points for all degree courses and an updated list of accredited programmes together with regulatory bodies requirements. All this information is provided before students can choose or change their programmes of study during the placement cycle (KUCCPS, 2019).

The application process has three stages where students choose four courses of their interest in their preferred institutions. Stage one is application when students are in school before or during the national examination period, stage two is after the national examination (KCSE) results. In this stage students who did their school application and wish to revise their choices or change them altogether can do it at that time. Students who did not apply in school can also make their applications now. Stage three is done when the students join the universities; they can change their course in a process called inter-university or faculty transfer. Students are eligible to change so long as there are vacancies in the programme of study they want to change to, and they meet set criteria. This process takes a month and once it is ended, the system closes down until the following year with a new cohort of students (KUCCPS 2014a). Several studies support the selection process: Kemboi, Nyaga and Misigo (2016) indicated that the process of choice and change of programme of study starts with subject selection in school and goes on during the placement of university courses. Nyamwange (2016) indicated that KUCCPS facilitates change of programmes of study by first providing a list of courses offered in the universities, their cut off points after the release of the KCSE results. Wright's (2018) study suggested that selection and admission policies such as centralized system affect students change of courses due to their inflexibility especially if a student wishes to change once the placement cycle is over. This study ascertained the influence of cut off points on change of programme of study.

2.2.2 Labour Market Forces

One of the variables of environmental conditions and events in social learning theory of career choice is events is economic conditions and labour market forces (Zunker, 2006). Labour market information is important because it facilitates informed choice of university courses which lead to students' future careers. Labour market forces in this study looked at the influence of job prospects or earnings. Changes in economy in a country usually affects the labour market and may influence choices and change of careers among students (Edmonds, 2012). Jobs prospects and earnings in a course or major have been expressed by many studies to influence choice of programme of study among university students.

Milsom and Coughlin (2015) confirmed that students look at job prospects in course or a major as they make or change their choice. In Duke University, students choose majors due to prospective future earnings (Arcidiacono, Hotz & Kang, 2011). Edmonds (2012) reported that students considered expected earnings in a course while others looked at a major that would lead to employment. Jaradat (2017) reported that students changed their majors due to job security, good salary, job availabilities and fill job market deficiency in special education, applied sociology and applied psychology in United Arab Emirates. Seymou and Serumola (2016) reported that students changed their major to Information Systems because of perceived value in the course. Perceived value was future salary, high job prospects, career possibilities and job openings in the field. The above studies show evidence that students change majors and programmes of study due to job prospects and openings, earnings, and job security.

However, there are few studies to show its evidence among Kenyan university students hence the need for this current study.

3.0 METHODOLOGY

The study method was quantitative, specifically a cross sectional survey with a causal comparative study design to compare the influence of environmental factors among students who changed before joining the university, after joining the university and those who did not change their programme of study at all. The study was conducted in selected seven (7) universities and sampled 398 first students' undergraduate students.

4.0 FINDINGS AND DISCUSSIONS

4.1 Descriptive Results

4.1.1 Change of Programme of Study before Joining University

The descriptive statistics results of change of programme of study before joining university is presented in Table 1.

Table 1: Environmental Factor: Change of Course before Joining University

Statement	Not at all	Very small extent	Small extent	Large extent	Very large extent	Mean	Std.Dev
KCSE Mean Grade	16.2%	0.0%	10.8%	8.1%	64.9%	4.1	1.5
Course cut off points	5.4%	2.7%	8.1%	13.5%	70.3%	4.4	1.1
Subjects combinations	21.6%	10.8%	16.2%	13.5%	37.8%	3.4	1.6
Job prospects (opportunity to get a job)	13.5%	2.7%	2.7%	16.2%	64.9%	4.2	1.4
Average						4.0	1.4

Results presented in Table 1 reveal that 64.9% of the respondents rated '*KCSE mean grade*' to a very large extent, 70.3% rated '*course cut off points*' to a very large extent, 37.8% rated '*subjects combinations*' to a very large extent while 64.9% rated '*job prospects (opportunity to get a job)*' to a very large extent to have influenced their decision to change programme of study. The overall mean of 4.0 indicated that majority of the respondents rated to a large extent the influence of environmental conditions and events in their decision to change programme of study/course before joining the university. The responses were varied as indicated by a standard deviation of 1.4.

4.1.2 Change of Programme of Study after Joining University

The descriptive statistics results of change of course after joining university is depicted in Table 2.

Table 2: Environmental Factor: Change of Course after Joining University

	Not at all	Very small extent	Small extent	Large extent	Very large extent	Mean	Std. Dev
KCSE Mean Grade	22.2%	0.0%	11.1%	19.4%	47.2%	3.7	1.6
Course cut off points	13.9%	8.3%	11.1%	30.6%	36.1%	3.7	1.4
Subjects combinations	5.6%	5.6%	11.1%	41.7%	36.1%	4.0	1.1
Job prospects (opportunity to get a Job)	11.1%	0.0%	11.1%	22.2%	55.6%	4.1	1.3
Average						3.9	1.4

Results presented in Table 2 revealed that 47.2% of the respondents rated to a very large extent ‘*KCSE mean grade*’ in having influenced their decision to change course, 36.1% rated, ‘*course cut off points*’ to a very large extent, 36.1% rated ‘*subjects combinations*’ to a very large extent while 55.6% of the respondents rated ‘*job prospects (opportunity to get a job)*’ to a very large extent. The overall mean of 3.9 indicated that majority of the respondents rated to a large extent the influence of environmental conditions and events in their decision to change programme of study/course after joining university. The responses were varied as indicated by a standard deviation of 1.4.

4.1.3 No Change of Programme of Study.

The descriptive statistics results of no change of programme of study at all are presented in Table 3.

Table 3: Environmental Factor: No Change at all

	Not at all	Very small extent	Small extent	Large extent	Very large extent	Mean	Std. Dev
KCSE Mean Grade	2.4%	2.4%	11.5%	21.7%	62.1%	4.4	0.9
Course cut off points	4.4%	6.0%	13.9%	25.8%	50.0%	4.1	1.1
Subjects combinations	6.0%	4.0%	9.5%	25.4%	55.2%	4.2	1.1
Job prospects (opportunity to get a job)	4.3%	5.9%	13.8%	22.1%	53.8%	4.2	1.1
Average						4.2	1.1

Results presented in Table 3 revealed that 62.1% of the respondents rated to a very large extent ‘*KCSE mean grade*’ in having influenced their choice of course; 50% rated ‘*course cut off points*’ to a very large extent, 55.2% rated ‘*subjects combinations*’ factor to a very large extent while 53.8% of the respondents rated ‘*job prospects (opportunity to get a job)*’ to a very large extent as having influenced their choice of programme of study/course. The overall mean of 4.2 indicated that majority of the respondents rated to a large extent the influence of environmental conditions and events in their choice of programme of study/course. The responses were varied as indicated by a standard deviation of 1.1.

4.2 Correlation between Environmental Factors and Change of Programme of Study

The research sought to establish the extent to which environmental factors influence students’ change of change programme of study/course. With reference to this study question, a null hypothesis that environmental factors have no significant influence on students’ change of programme of study was tested. The correlation results are presented in Table 4.

Table 4: Correlation Results: Environmental Factors and Change of Course

Variable		Change of Course	Environmental conditions and events
Change of Course	Pearson Correlation	1	
	Sig. (2-tailed)		
Environmental conditions and events	Pearson Correlation	.431**	1
	Sig. (2-tailed)	0.000	

** Correlation is significant at the 0.01 level (2-tailed).

The correlation results in Table 4 indicated a weak positive and significant relationship between environmental conditions and events and change of programme of study among first year undergraduate students. This was supported by a correlation value of 0.431 and p value of 0.000. Since the p value was found to be less than 0.05, we rejected the first null hypothesis and concluded that there was a statistically significant relationship between environmental conditions and events and change of programme of study among first year undergraduate students. In particular, KCSE mean grade, course cut off points, subjects combinations and job prospects (opportunity to get a job) were found to be important determinants of students change of course/ career.

4.3 Influence of Environmental Factors on Change of Programme of Study

The study sought to establish the influence of environmental conditions and events on students’ change of programme of study. The study used univariate regressions to determine the influence of environmental conditions and events factors on students’ change of programme of study. The regression results are summarized in Table 5.

Table 5: Summary: Environmental Factors and Change of Programme of Study

Change of Programme of Study	Beta coefficient (β)	Sig
KCSE Mean Grade	0.514	0.000
Job prospects	0.438	0.000
Course cut off points	0.368	0.000
Subject combinations	0.266	0.001

Based on the findings in Table 5, KCSE mean grade, course cut off points, subject combinations and job prospects had a positive and significant influence on students' change of career/course or programme of study. Further, results indicated that KCSE Mean Grade had the greatest influence on students' change of programme of study ($\beta=0.514$), followed by job prospects ($\beta=0.438$), then Course cut off points ($\beta=0.368$), and lastly subject combinations ($\beta=0.266$).

5.0 CONCLUSION

The study established that environmental factors have a positive and significant influence on change of programme of study among first-year undergraduate students in Kenyan universities. The study concluded that KCSE mean grade, course cut off points, subject combinations and job prospects (opportunity to get a job) influenced the decision to change programmes of study among first year undergraduate students.

6.0 RECOMMENDATIONS

Based on the findings and conclusion made; the study recommended that universities should support students in providing information on their accredited programme and their career prospects. Employers should provide labour market information regularly for students to learn trends in the job market. High schools should build network with universities and organize career days to share information on courses available, requirements and learning environment. Placement board should provide information on selection and placement processes to help students and teachers to prepare themselves for university education adequately.

REFERENCES

- Aminu, Maryam, & James Timothy. (2014). "Programme of study and Academic Performance of Microbiology Students in a Nigerian University." *International Journal of Science and Technology Educational Study* 5 (5): 58–66.
- Arcidiacono, P., Hotz, V. J., & Kang, S. (2011). Modeling college major choices using elicited measures of expectations and counterfactuals. *Journal of Econometrics*, 166(1), 3-16.
- Astorne-Figar, Carmen, & Jamin D. Speer. (2017). *How Students Choose a College: Understanding the Role of Internet Based Resources in the College Choice Process*. University of Memphis.
- Ayiro, L. P. (2016). Career choices: Dilemmas facing East African varsity students. *The East African*, April, 22, 2016. <http://www.theeastafrican.co.ke/ea-universities-guide>.
- Baik, C., Naylor, R., & Arkoudis, S. (2015). The First Year Experience in Australian Universities: Findings from Two Decades, 1994-2014. *Melbourne Centre for the Study of Higher Education*. <https://melbourne-cshe.unimelb.edu.au>.
- Bangser, M. (2008). Preparing High School Students for Successful Transitions to Postsecondary Education and Employment. National High School Center. https://www.mdrc.org/sites/default/files/PreparingHSSStudentsforTransition_073108.pdf.
- Boland, J., & Mulrennan, M. (2011). Application, Selection and Admission to Higher Education: A Review of International Practice. Higher Education Authority and National Council for Curriculum and Assessment. http://www.transition.ie/files/1352_HEA_Application_&%20_Selection_02.pdf.
- Burgess, A., Senior, C., & Moores, E. (2018). A 10-year case study on the changing determinants of university student satisfaction in the UK. *PloS one*, 13(2), e0192976. <https://doi.org/10.1371>.
- Cheema, U. A., Farman, A., & Qasim, A. P. (2017). Determinants Leading to Change in Career Preferences among Medical Students. *Annals of Punjab Medical College (APMC)*, 11(3), 196-201. <https://doi.org/10.29054/APMC/17.420>.
- Edmonds, J. (2012). Factors influencing choice of college major: what really makes a difference?. Rowan University. <http://rdw.rowan.edu/etd/147>.
- Enrolment Services (2013). Major Decisions: Facts & Figures about Students Changing Majors. The Ohio State University. [http://exploration.osu.edu/Breakin Up Is Hard to Do/Changing Majors 1.14.pdf](http://exploration.osu.edu/Breakin%20Up%20Is%20Hard%20to%20Do/Changing%20Majors%201.14.pdf).
- Firmin, M. W., & MacKillop, L. M. (2008). Frequent major changing: Extrinsic and intrinsic factors. *NACADA Journal*, 28(2), 5-13.
- Fizer, D. (2013). "Factors Affecting Programme of studies of College Students Enrolled in Agriculture." Martin: The University of Tennessee. https://www.utm.edu/departments/msanr/_pdf.
- Foraker, M. J. (2012). Does changing majors really affect the time to graduate? The impact of changing majors on student retention, graduation, and time to graduate. In *Annual Meeting of the Association for Institutional Research, New Orleans, LA*.
- Freedman, L. (2013). The developmental disconnect in choosing a major: Why institutions should prohibit choice until second year. *The Mentor: Innovative Scholarship on Academic Advising*, 15. <https://dus.psu.edu/mentor/2013/06>.

- Gathigia, K. J. (2011). "Investigation into Factors That Influence Students' Programme of study in Public Secondary Schools: A Case of Ol Joro Orok Division, Nyandarua North District, Kenya." Thesis, Kenyatta University. <http://ir-library.ku.ac.ke/handle/123456789/517>.
- Gelso, C. J., & Fretz, B. R. (1992). William James centennial series. *Counseling psychology*. San Diego, CA, US: Harcourt Brace Jovanovich.
- Hafalir, I. E., Hakimov, R., Kübler, D., & Kurino, M. (2018). College admissions with entrance exams: Centralized versus decentralized. *Journal of Economic Theory*, 176, 886-934. https://www.uibk.ac.at/economics/bbl/bbl_papiere_ss16/kuebler.pdf.
- Hastings, J. S., Neilson, C. A., & Zimmerman, S. D. (2013). *Are some degrees worth more than others? Evidence from college admission cutoffs in Chile* (No. w19241). National Bureau of Economic Research. <https://www.nber.org/papers/w19241.pdf>.
- Hernandez-Chanto, A. (2016). Centralized Assignment of Students to Majors: Evidence from the University of Costa Rica Job Market Paper. <https://kwet.ku.edu>.
- Jaradat, M. S., & Mustafa, M. B. (2017). Academic Advising and Maintaining Major: Is There a Relation?. *Social Sciences*, 6(4), 151. <https://doi.org/10.3390/socsci6040151>.
- Kemboi, J. K., Nyaga, K., & Misigo, B. (2016). "Relationship between Personality Types and Programme of studies of Undergraduate Students: A Case of Moi University, K Enya." *Journal of Education and Practice* 7 (3). <https://pdfs.semanticscholar.org/23c1/e82ff7437cf2cfde966556193e1505b9c2d5.pdf>.
- Kottler, J. A., & Shepard, D. S. (2014). *Introduction to counseling: Voices from the field*. Cengage Learning.
- Krumboltz, J. D. (2009). The happenstance learning theory. *Journal of career assessment*, 17(2), 135-154. <https://doi.org/10.1177/1069072708328861>.
- KUCCPS. (2014). Kenya Universities and Colleges Central Placement Service - Placement Policy." 2014. <http://www.kuccps.net>.
- KUCCPS. (2019). Kenya Universities and Colleges Central Placement Service - Placement Policy." 2014. <http://www.kuccps.net>.
- Machado, C., & Szerman, C. (2016). The Effects of a Centralized College Admission Mechanism on Migration and College Enrollment: Evidence from Brazil. In *SBE Meetings*.
- Madanji, O. G. (2014). Determinants of the trend of demand for and supply of university education in Kenya. *Nairobi, Kenya: Kenyatta University*. <http://ir-library.ku.ac.ke/bitstream/handle/123456789/11083>.
- Maingi. (2007). Certainty in Programme of study among Kenyatta University Students Implications for Career Counseling. Nairobi, Kenya: Kenyatta University. <http://ir-library.ku.ac.ke/bitstream/handle/123456789/12677>.
- Malgwi, C. A., Howe, M. A., & Burnaby, P. A. (2005). Influences on students' choice of college major. *Journal of Education for Business*, 80(5), 275-282. <https://doi.org/10.3200/JOEB.80.5.275-282>.
- Marade, A. A. (2015). *Changing a college major: A comparison of student and faculty views* (Doctoral dissertation, Middle Tennessee State University). <http://jewelscholar.mtsu.edu/bitstream/handle/mtsu/4557>.

- McMillan, J. (2005). Course change and attrition from higher education. *LSAY research reports*, 43.
- Milsom, A., & Coughlin, J. (2015). Satisfaction with college major: A grounded theory study. *The Journal of the National Academic Advising Association*, 35(2), 5-14. <https://doi.org/10.12930/NACADA-14-026>.
- Mukhwana, E., Oure, S., Kiptoo, S., Kande, A., Njue, R., Too, J., & Some, D. K. (2016). State of university education in Kenya. *Commission for University Education. Discussion Paper*, 4, 3.
- Nyamwange, J. (2016). Influence of Student's Interest on Career Choice among First Year University Students in Public and Private Universities in Kisii County, Kenya. *Journal of Education and Practice*, 7(4), 96-102. <http://files.eric.ed.gov/fulltext/EJ1092415.pdf>.
- Odhiambo, G. (2018). The role of Kenyan universities in national development. In *FIRE: Forum for International Research in Education* (Vol. 4, No. 3).
- Ooro, H. (2017). *An assessment of factors influencing career choices among university students: A survey of students in the school of Business and Economics, Kisii University* (Doctoral dissertation, Kisii University). <http://library.kisiuniversity.ac.ke>
- Orr, D., Usher, A., Haj, C., Atherton, G., & Geanta, I. (2017). Study on the impact of admission systems on higher education outcomes. Volume I: Comparative report. *Directorate-General for Education Youth, Sport and Culture. Luxembourg: Publications Office of the European Union*.
- Pabalinas. (2015). Programme of study: An Analysis of Multiple Intelligences and Socio-Environmental Factors. In Singapore. <http://icehm.org/upload/2466ED0315092.pdf>.
- Prutsch, M. J. (2014). Higher Education Entrance Qualifications and Exams in Europe : A Comparison Study. Policy Department B: Structural and Cohesion Policies European Parliament. <http://www.europarl.europa.eu/RegData/etudes/etudes/join/2014/529057>.
- Ryan, Y. J.(2017). Factors influencing the choice of college among undergraduate students in public Universities in Kenya. A case study of the University of Eldoret. *Dalam Aust. J. Commer. Study. University of Eldoret, Kenya*. <https://www.academia.edu/9617740/>.
- Seymour, L. F., & Serumola, T. (2016). Events that lead university students to change their major to Information Systems: A retroductive South African case. *South African Computer Journal*, 28(1), 18-43.
- Skatova, A., & Ferguson, E. (2014). Why do different people choose different university degrees? motivation and the choice of degree. *Front Psychol*. 2014; 5: 1244. <https://doi.org/10.3389/fpsyg.2014.01244>.
- Tierney, W. G., Bailey, T., Constantine, J., Finkelstein, N., & Hurd, N. F. (2009). *Helping students navigate the path to college: What high schools can do*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, US Department of Education.
- Van Wie, K. O. (2017). Advising and Career Development for Undecided Students. University of New Mexico. <https://advisement.unm.edu>.
- Wright, C. (2018). *Choose Wisely: A Study of College Major Choice and Major Switching* (Doctoral dissertation, The Pardee RAND Graduate School). <https://doi.org/10.7249/RGSD414>.

Xiao, J. J., Newman, B. M., & Chu, B. S. (2018). Career preparation of high school students: A multi-country study. *Youth & Society*, 50(6), 818-840.
<https://www.researchgate.net/publication/298897596>.

Zunker, V. G. (2006). *Career counseling: A holistic approach* . Belmont, CA: Brooks.