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Full Length Research Paper

# Accounting education at vocational high schools in Turkey: An application

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Accounting shows the process of taking right and effective decisions to present some regular, complete, and true information of the past and also make a plan towards the future. In other words, while accounting presents information about the present state in of managements, it shows a way for taking reel decisions related to the future and fixing risks and opportunities at the same time. Because accounting is able to perform its functions successfully, people adapting to accountancy will receive a good education. Vocational high schools are opened to train intermediate management staff who need to fulfil an important need for their professional life. However, there are not much academic studies on the extent these schools can reach their goals. So this study tried to put forward how many students in the departments that receive the accounting course at vocational high schools aim at doing a career in the field, which factors are effective while they choose the department, how useful are the accounting courses taken by them in the business life and whether or not there are any differences among students. In this way, a questionnaire was given to the students and graduate of the departments of Accounting, Management, Foreign Trade, Banking, Insurance, and Tourism of Social Sciences Vocational High School of Selcuk University.

**Key words:** Vocational high schools, accounting, accounting education.

## INTRODUCTION

### The development of universities and vocational high schools in Turkey

The universities having an organization and status at present in Turkey start by the establishment of "Darulfunun" in 1863. Despite the fact that education and training in the European universities are based on theological sciences under the control of the church, the university keeps its scientific career and course since the

beginning when the Turkish people were established under various conditions during the periods of Seljuks, Ottomans, and others. In this context, Istanbul University (based on *Fateh Kulliyesi – the Community of Madrasas/Universities*), which is the first of the modern universities in Turkey, established in 1453 by Sultan Mohammad Khan, the Conqueror to teach physical sciences in addition to theological sciences, has a five-century past. *Darulfunun* that was abolished in 1933 was

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**Table 1.** Summary of the number of students in Turkish universities.

	Total No of students		
	Female	Male	Total
UNIVERSITIES	2.263.704	2.672.887	<b>4.936.591</b>
VOCATIONAL TRAINING SCH	615.072	642.756	<b>1.257.828</b>
Voc. Tng. Sch (Not Including Open Education)	207.318	300.545	<b>507.863</b>
Open Education	407.754	342.211	<b>749.965</b>
UNDERGRADUATE	1.255.435	1.489.105	<b>2.744.540</b>
Undergraduate (Not Including Open Education)	621.406	616.247	<b>1.237.653</b>
Open Education	634.029	872.858	<b>1.506.887</b>
SECOND EDUCATION	269.176	375.045	<b>644.221</b>
Undergraduate	185.145	211.150	<b>396.295</b>
Voc. Tng. Sch.	84.031	163.895	<b>247.926</b>
GRADUATE	118.218	159.133	<b>277.351</b>
Masters	92.655	124.933	<b>217.588</b>
Doctorate	25.563	34.200	<b>59.763</b>
Medical Interns	5.803	6.848	<b>12.651</b>
THE OTHER INSTITUTIONS	5.049	34.050	<b>39.099</b>
VOCATIONAL TRAINING SCH	799	21.153	<b>21.952</b>
UNDERGRADUATE	625	7.400	<b>8.025</b>
GRADUATE	223	1.367	<b>1.590</b>
Masters	142	900	<b>1.042</b>
Doctorate	81	467	<b>548</b>
MEDICAL INTERNS	3.402	4.130	<b>7.532</b>
<b>TOTAL FOR TURKEY</b>	<b>2.706.937</b>	<b>2.268.753</b>	<b>4.975.690</b>

Source: <http://osym.gov.tr/dosya/1-69398/h/1ogrencisayozettablosu.pdf> Access Date: 20.01.2014.

reorganized as "Istanbul University" tied to Ministry of National Education and had not autonomy or legal entity. *The School of Sanayi-i Nefise*, now "*Mimar Sinan University*", established by Osman Hamdi in 1882, is one of the most deep-rooted universities in Turkey. All the universities, by the law introduced in 1945, had autonomous legal entities in science and administration based on the same rules. These universities became the educating, training, and researching centers having administrative and scientific autonomies and consisting of faculties, institutes, high schools, and research institutions by an amendment that was made in the law in 1960. Additionally, senate and the Minister of National Education need to approve this university according to this law in order to open or close a new faculty. With some amendments made in the 1961 Constitution, the 1971 Constitution, and the 1982 Constitution for the organizational structure of universities, various new universities were established across the country (<http://tr.wikipedia.org/wiki/%C3%9Cniversite>, Access Date: 27.01.2014).

By 2014, there are 108 state universities and 71 private (foundation) universities in Turkey ([http://tr.wikipedia.org/wiki/T%C3%BCrkiye'deki\\_%C3%B Cniversiteler\\_listesi](http://tr.wikipedia.org/wiki/T%C3%BCrkiye'deki_%C3%B Cniversiteler_listesi); Access Date: 27.01.2014). The

numbers of student studying for associate degree, bachelor, master's degree, and doctorate of these universities for the 2012/2013 academic year are shown in Table 1. According to this table, the total number of student is about five million. In Table 2, the total numbers of teachers working for these educational establishments are almost 80 thousands.

Vocational high schools are the higher education institutions that train the high-level practitioner members of any profession. They train for two years. Students with the right to graduate are granted an associate degree diploma by the university from which s/he graduates. The students who graduate from the technical departments are called "*technician*." The foundational aim of vocational high schools is to stop people from waiting to get into universities and train intermediate technical staffs who the industry needs indeed. Today, the number of graduates has reached approximately 700.000. With a project (between MNE and HEB) which started in 2002 by cooperation between Ministry of National Education (MNE) and Higher Education Board (HEB), the graduates of vocational high schools are accepted into the vocational high schools in open admission. Students who are out of field or not graduates of vocational high school have to make a definite point from the university entrance



**Table 2.** Summary table of the number of teaching staff.

	Total	Prof.	Assoc. Prof.	Assist. Prof.	Instructor	Language Instructor	Specialist	Research Assistant
Total	130.559	17.807	10.962	27.385	20.820	9.250	3.396	40.939
Total for Turkey								
Female	54.265	5.007	3.542	10.166	8.222	5.638	1.628	20.062
Male	76.294	12.800	7.420	17.219	12.598	3.612	1.768	20.877
Total for Turkey	261.118	35.614	21.924	54.770	41.640	18.500	6.792	81.878

Source: <http://osym.gov.tr/dosya/1-69410/h/2ogretimelemanlarisayozettablosu.pdf>, Access Date: 20.01.2014.

**Table 3.** Two-year vocational training school.

	No of students			
	No of school	New-registered	Studying	Graduate
Two-Year Vocational Training Schools	745	279.924	755.789	165.166
Voc. Tng. Sch. For judicial clerks	27	1.945	4.605	1.111
Voc. Tng. Sch. of Management	1	571	1.142	208
Vocational Tng. Sch.	550	214.293	580.430	129.971
Voc. Tng. Sch. of health Services	87	19.637	42.489	9.626
Voc. Tng. Sch. of Technical Sci.	34	23.439	70.589	12.302
Voc. Tng. Sch. of Social Sci.	32	17.948	51.561	11.053
Voc. Sch. of Tourism & Hotel Services	4	743	2.063	423
Voc. Tng. Sch. of Health Sci.	1	374	515	122
Voc. Tng. Sch. of Title Deeds & Cadastral Studies	1	80	200	47
Voc. Tng. Sch. of Forestry	1	112	489	56
Maritime Voc. Tng. Sch	3	234	608	90
Aeronautical Voc. Sch. of Higher Edu.	2	266	382	
Tourism Voc. Tng. School	2	264	587	69
Total for turkey	1.490	559.830	1.511.449	330.244

Source: <http://osym.gov.tr/dosya/1-69431/h/5onlisanslisansduzeyogrencisay.pdf>, Access Date: 20.01.2014.

exam in order to enter these schools. Courses are taught by both competent members of teaching and academicians from universities. Importance is attached to professional training as much as theory. In this manner, schools having insufficient technical opportunities can use laboratories and ateliers of vocational high schools. Each vocational high school has a definite duration of internship. A student whose internship study is not approved may not graduate even if s/he passes all the courses. Students can go for bachelor's degree education in their own branch by the External Transfer Exam, which is done every year. In order to do this exam, he has to be a graduate or a final year student.

In Table 3, the numbers of vocational high schools and their students in Turkey in the 2012/2013 educational year are seen. Almost 1500 vocational high schools have 1.5 million of students by 2012/2013 academic year. Students who graduate from economics and administrative sciences can do External Transfer into the third-grade classes of the Faculties of Management or

Economics of Anatolian University (the Open University) via open admission. Students who graduate from other departments can start bachelor's degree in the one-year preparatory class. If they pass all courses in the preparatory class successfully, they go for the bachelor education from the third class. Nevertheless, students cannot get all the benefits from the university while studying in preparatory class ([http://tr.wikipedia.org/wiki/Meslek\\_Y%C3%BCksekokulu](http://tr.wikipedia.org/wiki/Meslek_Y%C3%BCksekokulu), Access Date: 24.01.2014).

The total number of students in the two-year higher education institutions for 2012/2013 academic year is 1.505.965. 755.789 of this number are present at the formal higher education institutions, and the rest 749.965 continue in the open educational departments. In the Applied Social Sciences Vocational High Schools, there are 785.595 students totally. The Technical Sciences Vocational High Schools have 322.704 students. The reason why the numbers of students of the Technical Sciences Vocational High Schools are less than the

**Table 4.** Vocational high school programmes mostly preferred by the students during 2012-2013 academic year.

<b>Department</b>	<b>No</b>
ACCOUNTING & TAX PRACTICES	92.099
BANKING & INSURANCE	71.270
BUSINESS MANAGEMENT	59.771
COMPUTER PROGRAMMING	59.172
IMPORTS and EXPORTS	58.900
TOURISM and HOTEL MANAGEMENT	53.497
OFFICE MGT and MANAGERIAL ASSISTANCE	37.566
ELECTRONICS	35.492
MACHINERY	33.568
RADIO CINEMA and TELEVISION	20.829

Source: 2012-2013 Year Higher Education Statistics.

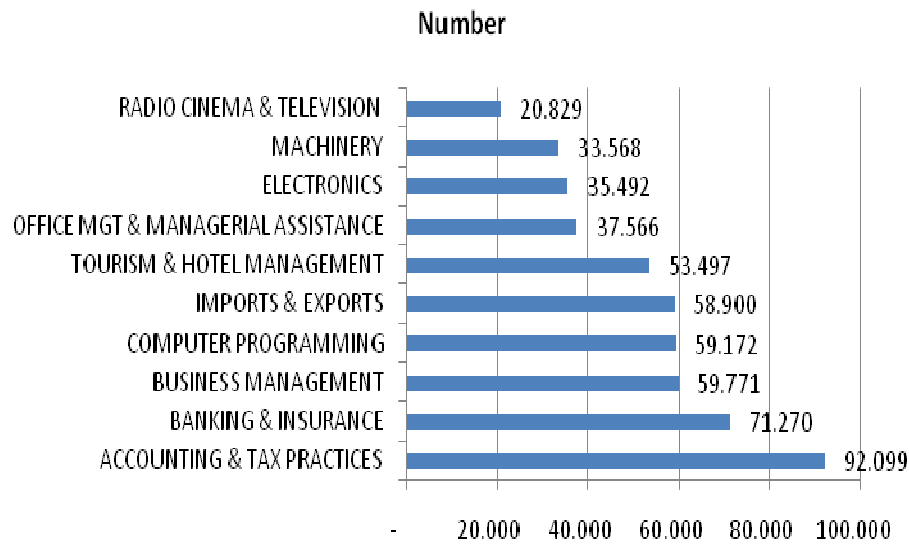
Applied Social Sciences Vocational High Schools is the schools related to the open education have less numbers of students. This emerges from the need and requirement of application for the compulsory education and training in the fields of technical sciences. The vocational high schools in Turkey do 260 programmes. According to the statistical data of 2012-2013, Accounting and Tax Practices, Banking and Insurance, Business Management, Computer Programming, Imports and Exports, Tourism and Hotel Management, Office Management and Managerial Assistance, Electronics, Machinery, Radio, Cinema and Television are the most preferred departments of students (Table 4). As seen in Figure 1, the most preferred programme in Vocational High Schools is accounting.

The General Accounting course is taught in each programme. While the General Accounting course taught in the programmes of Accounting, Managements, and Marketing has 4 credits, in the programmes of Foreign Trade and Office Management, it has 3 credits. The course of the end-of-period accounting transactions is taught only in the programmes of Accounting, Management, and Foreign Trade. In Table 5, it is seen that Accounting and Finance Education is heavily taught in the departments of Accounting and Management; only the basic Accounting courses are taught in other programmes out of these two programmes. The courses of Finance are not taught in the programmes of Imports and Exports apart from the courses of International Finance and Financial Management. The Accounting and Finance courses in the programmes of Accounting and Management are intensely given in the third and fourth semesters. When the courses of Accounting and Finance taught in both programmes are compared, it appears that the Finance courses (if selected in the second semester) in the programme of Management are taught more than in the programme of Accounting (in terms of the number

of course and credits); and that the Accounting courses in the Accounting programme are given more than the Management Programme. The total credit of the Accounting courses taught in the Accounting programme in two years is 39; for the programme of Management, it is 28; the total credit of the Finance courses taught in two years in the Accounting programme is 8, and for the programme of management, it is 20. In addition, because the Finance courses (Financial Management and Analysis of Financial Tables) given in the Accounting programme are elective and have only 8 credits; the Finance course in this programme are not intensely taught.

### **The objective of the research**

Vocational high schools are established with the aim of fulfilling the employment of intermediate staff in the market. By this study, it is intended to fix whether there is a relationship between the department that students of vocational high school study in and the occupation that they work, or not. Knowing the extent the students of vocational high school select the profession is important for determining whether their departments serve the objective. Furthermore, it helps these educational institutions for reaching their objectives to know the factors affecting this selection and whether these students adapt to their departments as a profession. That is why this research was done with the students of Accounting, Management, Foreign Trade, Banking and Insurance, and Tourism. The objective of this study is to put forward the preferring motives of students in vocational high school, their perspectives about the Accounting profession, how effective these factors are in selecting the profession and determining the factors affecting the selection of Accountancy.



**Figure 1.** Vocational high school programmes mostly preferred by the students during 2012-2013 academic year.

## LITERATURE REVIEW

To determine the effectiveness of Accounting Education and to analyze the results, many various and comprehensive researches have been made. In a research on students' perceptions in vocational high school about Accounting profession and accountants in Ireland, the students saw accounting profession as boring, rule-based, and having exact boundaries and these perceptions affected them in the school environment and the society (Byrne and Willis, 2005). In another study conducted in Israel, it was examined the career choice and perceptions of accounting students. It appeared that the accounting students chose the profession during their graduation; they did not think about it in the first years of their stay in school (Danziger and Eden, 2006). In another research on the factors influencing the career choice of the accounting students in New Zealand, it was concluded that family, business environment, and financial status were effective for the selection of the profession (Ahmed et al., 1997). In USA, Canada, and Australia, some similar studies were conducted to determine the factors affecting the career choice of the accounting students. Likewise, Carpenter and Strawser (1970) did a study on the preferences of choosing a job of the accounting students. Additionally, Paolillo and Estes (1982) examined the factors affecting the career choice of students in accounting, engineering, medicine, and law in 1982. Felton et al. researched the factors affecting students' choice of accounting profession in Canada in 1994. In this study, 897 students participated and five factors affected their career choice. These factors were listed as high gain in the beginning, high gain in the long term, professional reputation, in-service

reward, and accounting training received in school. Besides all these works, Auyeung and Sands signed on a different study in 1997. In the study, it was fixed that the factors related to the choosing of accounting profession varied according to the cultural structures of students. Another study connected to the career choice of students was conducted by Smyth and Hannan in 2000. In this study, it was concluded that the students took their decisions on their career choice during their second level in high school.

In addition to the studies which are done on vocational high schools that provide an accounting education abroad, there are some studies also in Turkey that are done on the students of accounting programme of vocational high school. The study of Yardimcioglu and Buyuksalvarci (2007), which is one of these studies, is done for determining the level of accounting education at vocational high schools, fixing the problems, and being able to offer solutions to these problems. A significant difference is reached in terms of the level of satisfaction according to the departments. It appears that the students in the departments of Accounting and Management have a good level of satisfaction from the accounting courses than the satisfactory levels of students in the other departments. In the departments of Accounting and Management, their satisfaction is at the middle level. With the research done by Bayazitli and Çelik (2004), it is analyzed the accounting education taught in the higher education institutions at bachelor's degree and also tried to fix the efficiency and quality of the education that is taught. As a result of this research, it was determined that 10 of 45 universities are on the boundary of effectiveness but others were not effective. Additionally, it was seen that the most important deficiency at universities was

**Table 5.** Curriculum of Vocational High Schools.

Courses	Accounting Programme		Management Programme		Foreign Trade Department		Management and Secretary Programme		Marketing Programme	
	Total Credits	Z/S	Total Credits	Z/S	Total Credits	Z/S	Total Credits	Z/S	Total Credits	Z/S
<b>Semester I</b>										
General Accounting	4	Z	4	Z	4	Z	4	Z	4	Z
<b>Semester II</b>										
The period-end closing procedures	4	Z	4	Z	4	Z	-	-	-	-
<b>Semester III</b>										
Comp. Accounting 1	4	Z	4	Z	-	-	-	-	-	-
Cost Accounting	4	Z	4	S	-	-	-	-	-	-
Accounting of Companies	3	Z	3	S	-	-	-	-	-	-
Financial Management	4	S	4	Z	2	Z	-	-	-	-
Accounting Systems Organization	2	S	-	-	-	-	-	-	-	-
Building Accounting	2	S	-	-	-	-	-	-	-	-
<b>Semester IV</b>										
Comp. Accounting 2	4	Z	4	S	-	-	-	-	-	-
Accounting Audit	3	Z	-	-	-	-	-	-	-	-
Accounting of Exporting Companies	2	Z	2	S	3	Z	-	-	-	-
Analysis of Financial Tables	4	S	4	Z	-	-	-	-	-	-
Bank Accounting	3	S	3	S	-	-	-	-	-	-
Inflation Accounting	2	S	-	-	-	-	-	-	-	-
Accommodation Accounting	2	S	-	-	-	-	-	-	-	-
Working-Capital Management	-	-	2	Z	-	-	-	-	-	-
Capital Market Transactions	-	-	4	Z	-	-	-	-	-	-
Managerial Budgets	-	-	2	Z	-	-	-	-	-	-
International Finance	-	-	2	S	3	Z	-	-	-	-
Financial Investment Instruments	-	-	2	S	-	-	-	-	-	-

Z: Compulsory Lesson, S: Optional Lesson

Source: (Gençtürk, 2006: 55-82).

effectively not to realize the use of resource and that the resources, which universities obtain in the accounting education, should be positively used by universities to develop the education. With the study done by Çürük and Doğan (2001), it is tried to determine in which level the accounting education taught in university fulfils the demands of managements. In this research, the accounting education given in Turkey and Europe was

put forward, and some differences were fixed. One of the results obtained by the study was that management needs to cooperate with universities on the accounting education and the contents of accounting course. In the study done by Yayla and Cengiz (2005), it is tried to fix the reasons that urge individuals to want to be accountants. In this manner, a questionnaire was made for the students of Faculty of Economics and

Administrative Sciences of Karadeniz Technical University. By this study, the preferring motives of people for accountancy were statistically sorted by their greatness, in turn, as the personal preference of students, the effect of family and its close environment, the students' perception on the accountancy become attractive, and the acceptance of accountancy as a high-profitable occupation. In this context, having information and experience about accountancy will constitute important business opportunities. Bekçi et al. (2006) emphasize the importance of information technologies and accounting software (package) programmes in the profession of accountancy. They comparatively tried to determine the students' viewpoints, from the Vocational High Schools and Faculty of Economics and Administrative Sciences of Suleyman Demirel University, on computerized accounting course. In the research, the students studying in the vocational high schools receive computerized accounting more than the faculties do because the course was required and its hours were more. In the study done by Paksoy and et al. (2005), it is aimed at determining the level of accounting education and its problems in the Vocational High Schools of Harran University and developing some solution offers. Karcioğlu and Ertaş (1996) emphasize the role of higher education institutions in developing accountancy, the goals of accounting education, and the elements of accounting education and experiment. It was consequently treated the importance of necessary precautions to be taken in addition to the educational and experimental needs to be reviewed for developing professional accountants. With the research made by Demir (2003), it was aimed at fixing the opinions and suggestions of members of accountancy (e.g. independent accountant, independent financial adviser, official financial adviser) about the compulsory internship during the last year of the vocational high school. In the research, questionnaire was given to the members of the profession in the Central Anatolia Region. This study questioned some matters like the importance, adequacy, and efficiency of the internship, and finally it was of the opinion that the internship partly attained its aim İbicioğlu and Doğan (2003), in their research, gave a questionnaire to the staff and students of vocational high schools. As a conclusion, it was fixed that both students and academicians assess the educational quality and the competitive capability of the programmes differently. In addition, it appeared that more members of the university complained about the vocational high schools and this complicated coordination and control. Yılmaz and Ciger (2004) studied the effects of globalization on accounting and determined how the accounting education would take form in this direction. Some determinations and suggestions were made toward the quality of accounting education taught in the higher education institutions. This study advised that importance should be attached to the skills in the accounting

education and to strengthen the relations of accounting education in the industry. Guclu (2004) administered a questionnaire on the students doing Accounting Programme in Ankara Vocational High School. As a result of this research, it was expressed that staff in the vocational high school were inadequate and the quality of education was insufficient. The number of vocational high schools needs to be increased and broadened across the country in this manner, and there was a worrisome state for future. Gençtürk and Bağcı (2005) administered a questionnaire on the teachers in the vocational high schools operating in the Cities of Isparta, Burdur, Antalya, Denizli, and Afyon, and tried to determine the problems related to education and training. In this study, the main educational problems were fixed like inadequacy of students because of open admission, the unsuitableness of course contents, and the insufficiency of technical opportunities.

When the studies above are treated, it appears that most of the studies are inclined towards determining the effectiveness of the education taught at vocational high schools and that the studies concerned with fixing the efficiency of education at faculties are less. For a big part of the studies, the method of questionnaire is applied, and most of the questionnaires are performed on students. Additionally, a questionnaire is made on employers and members of teaching in some studies. Furthermore, it is seen that almost all the studies are made only for fixing the efficiency of accounting education and accounting courses. These studies have significance to determine the efficiency of the accounting courses that are taught and to measure the competency of lecturers that teach the accounting courses.

## METHOD

The data in this research were collected by a questionnaire developed by Yarcımcıoğlu and Büyükşalvarc (2007) and Gençtürk (2006). Academics and employees who are experts help in the development of the questionnaire. In 25.12.2014, it was made a pretest on twenty-five persons. Considering the suggestions coming with this pretest, the questionnaire form was ended in 30.12.2014. Thereafter, the questionnaire was applied on the students who graduated and studied in the departments of Accounting, Management, Foreign Trade, Banking and Insurance, and Tourism of Social Sciences Vocational High School of Selçuk University, from 6<sup>th</sup> January, 2014 – 24<sup>th</sup> January, 2014, by *face-to-face meeting via the convenience sampling way*. The questions in the questionnaire are in five groups. The questions in the first section are concerned with the demographic characteristics of people who answer the questionnaire (e.g., age, sex, department, high school graduated from, and whether he is a student or not). The second section consists of 23 questions towards learning the preferring motives of school that he studies or graduates from. In the third question, there are six questions inclined to the preferring motives of vocational high school. While the fourth section has seven questions on the factors affecting the selection of occupation, the fifth section has the questions about which courses taken during their educational years are useful for their professional life. In order

**Table 6.** Demographic information.

<b>Age</b>	<b>Frequencies</b>	<b>Rates</b>
18-22	199	59,1
23-27	107	31,8
28-32	28	8,3
33-37	2	0,6
38 and above	1	0,3
<b>Sex</b>		
Male	185	54,9
Female	152	45,1
<b>Department</b>		
Accounting	184	54,6
Management	84	24,9
Banking and Insurance	46	13,6
Foreign Trade	23	6,8
<b>High School Graduated</b>		
Commercial	233	69,1
Anatolian	31	9,2
Normal	65	19,3
Tourism	6	1,8
Industrial - Vocational	2	0,6
<b>State of School</b>		
Studied	211	62,6
Graduated	126	37,4

to form the questions in the questionnaire, nominal and interval scales were used. Under the interval scales, it was preferred *five-point likert scale (grading)*, and the answer categories were fixed as “*Strongly Disagree*”, “*Disagree*”, “*Neutral*”, “*Agree*”, and “*Strongly Agree*”.

#### The statistical methods used in the research

The data collected in the research were analyzed by SPSS 19.0. In order to assess the demographic features of people in the scope of the research, the rates of frequency were given. Kolmogorov-Smirnow Test was applied to fix whether the data, which consist of 23 questions on learning the preferring motives of school studied in or graduated from, showed a normal distribution or not. Because the data did not show a normal distribution, non-parametric tests were applied for analysis. Additionally, in order to determine whether there is a difference between the variable “My Preferring Motive of Department that I Studied in or Graduated from” according to sex, Mann Whitney U-Test was used.

#### The reliability of scale

In the research, a reliability test was applied on the scale to know about the consistency (internal consistency) of the questions, which

were used for measuring “My Preferring Motive of Department that I Studied in or Graduated from” with each other and to what extent the scale reflected the concerned problem. In the reliability analysis, it is wished that Cronbach Alpha Coefficient becomes positive and above 0.60. The Alpha Coefficient used in this study is 0.71. This value means the scale is very well reliable. That is, the internal coefficient of scale suits the analysis.

## FINDINGS AND ASSESSMENT

It appears that 59.1% of the people in the research are between 18 and 22 years old, 54.9% are male, 54.6% are in the Department of Accounting, and 69.1% graduated from the Commercial High School. Additionally, 62.6% are still studying, and 37.4% have graduated (Table 6).

108 of 211 students who filled the questionnaire and still study are working. 59 students are working with a financial advisor. 62 of 126 graduate students are working with a financial advisor. According to the results in Table 7, 35.91% of students who study in a vocational high school or graduate are working in the field of accounting.

**Table 7.** The students' working states.

Job Made	About Your State		Total	Total
	Studied	Graduated		
Not Studying	108	19	127	37,69
Foreign Trade	0	3	3	0,89
Human Resources	13	13	26	7,72
Waitering	7	1	8	2,37
Accountancy	59	62	121	35,91
Hospital	2	0	2	0,59
Public	3	8	11	3,26
Taxi Driver	1	0	1	0,30
Shop Keeper	8	4	12	3,56
Banker	1	4	5	1,48
Estate Agent	1	0	1	0,30
Insurance	5	11	16	4,75
Worker	3	0	3	0,89
Stylist	0	1	1	0,30
<b>Total</b>	<b>211</b>	<b>126</b>	<b>337</b>	<b>100</b>

**Table 8.** The Preferring Motives of the Departments for Students.

The Preferring Motives of the department that I study in or graduate from n=337	Averages	Standard Deviations
A1 It is a profession to have a high profit.	4,0386	,92662
A2 It is a job to necessitate working in discipline and regularity.	4,1365	,87240
A3 It is a job to necessitate taking a responsibility.	4,2493	,91460
A4 It is an active and dynamic job.	3,8783	,94493
A5 It is a job to bring my originality forward.	3,6350	,99119
A6 It is a job to be suitable for independently working.	3,7151	1,04746
A7 It is a job to have a prestige in the community.	4,2107	,89316
A8 It is a job preferred by the people who have some definite social status.	3,9258	,95298
A9 It is a job based on reliability.	4,2611	,87801
A10 It is a job to enable to do a career.	3,7478	1,23148
A11 It is under the effect of my previous business experiences.	3,5875	1,08242
A12 It is because I have done an internship in this field.	3,6706	1,11595
A13 It is due to seminars and conferences to which I have attended in this area.	2,8872	1,32030
A14 It is a job to keep its validity in the future.	4,2107	,94812
A15 It is a job always to be needed.	4,3650	,87646
A16 It is because of my family's effect.	3,0920	1,57184
A17 It is because of my relatives' effect.	1,9852	1,31036
A18 It is because of my friends' effect.	2,5727	1,50047
A19 It is because of the effect of my school and education.	3,6202	1,41356
A20 It is because of the effect of my environment that does this profession.	3,6736	1,08025
A21 It is a job to be suited to my life style.	3,4570	1,04316
A22 It is because I think that I have a capability to do this profession.	3,5638	1,04778
A23 It is because I think that it will bring me knowledge and skill to facilitate my entry into other occupations.	3,5757	1,09153

In Tables 8-13, the preferring motives of students who graduate or study in their departments are assessed by five-point likert scale. According to the conclusions, most

of the students who filled the questionnaire in the Vocational High School say they select the department because, "It is a job that is always needed" (A: 4.36), "It is

**Table 9.** The preferring motives of vocational high schools.

<b>My Preferring Motive of Vocational High School n=337</b>	<b>Averages</b>	<b>Standard Deviations</b>
It is because of a SSE regulation.	3,7329	1,46585
It is because I like this occupation.	3,4184	1,17515
It is to have a profession.	4,2552	,93868
It is because of my environment's effect.	3,5638	,98935
It is for a better opportunity of job.	3,8160	1,00976
It is out of my will.	2,8512	1,46253

**Table 10.** The preferring motives of students for profession.

<b>Please state whether you agree with the expressions below n=256</b>	<b>Averages</b>	<b>Standard Deviations</b>
The expectation of career is more effective for selection of occupation.	3,4805	1,16131
The expectation of high profit and responsibility is more effective for selection of occupation.	3,7891	,90448
The expectation of social status is more effective for selection of occupation.	3,5313	,90261
The professional knowledge and skill are more effective for selection of occupation.	3,7695	,97297
The professional experience is more effective for selection of occupation.	3,8555	,89804
The family's environment is more effective for selection of occupation.	3,5547	1,10122
The educational environment is more effective for selection of occupation.	4,0078	1,05158

**Table 11.** The Assessment of the Accounting Courses Taken.

<b>Please state whether you agree with the expressions below n=126</b>	<b>Averages</b>	<b>Standard Deviations</b>
The General Accounting Course is very useful for my business life.	4,5635	,98384
The End-Of-Period Accounting Course is very useful for my business life.	3,8413	1,25483
The Cost Accounting Course is very useful for my business life.	3,8810	1,52634
The Managerial Accounting Course is very useful for my business life.	2,4603	1,34254
The Accounting Course On Companies is very useful for my business life.	3,5714	1,51488
The Accounting Course On Foreign Trade Transactions is very useful for my business life.	1,9603	1,26744
The Cooperative Accounting Course is very useful for my business life.	1,4683	1,03295
The Course Of Accounting Audit is very useful for my business life.	3,0714	1,41522
The Course Of Analysis of Financial Tables is very useful for my business life.	3,9444	1,34048

**Table 12.** The difference between the preferring motives of the studied or graduated department according to the state of sex according to the results of Mann-Whitney U-Test.

	<b>Sex</b>	<b>N</b>	<b>Rank Averages</b>	<b>Z</b>	<b>p</b>
<b>A2</b> It is a job to necessitate working in discipline and regularity.	Male	185	179,94	-2,425	,015
	Female	152	155,69		
<b>A3</b> It is a job to necessitate taking a responsibility.	Male	185	181,82	-2,913	,004
	Female	152	153,40		

a reliable job" (A: 4.26 ), and "It is a job that necessitates taking a responsibility" (A: 4.24). Among the preferring motives of students for their departments, it appears there is not any effect of their relatives.

The students in the Vocational High School consciously

prefer their departments. It is seen that the number of students who come to the department without their will is less.

The educational environment has an important effect on selection of occupation. Additionally, it is seen the



**Table 13.** Hypothesis, Chi-Square Test Belonging to a Significant Relationship in between the High School that is Graduated and the Department that is Preferred.

n=337		Department				Total
		Accounting	Management	Banking and Insurance	Foreign Trade	
	Commercial	123 52.80%	58 24.90%	37 15.90%	15 6.40%	233 100.00%
	Anatolian	19 61.30%	8 25.80%	1 3.20%	3 9.70%	31 100.00%
High School Graduated	Normal	36 55.40%	16 24.60%	8 12.30%	5 7.70%	65 100.00%
	Tourism	4 66.70%	2 33.30%	0 0.00%	0 0.00%	6 100.00%
	Industrial	2 100.00%	0 0.00%	0 0.00%	0 0.00%	2 100.00%
Total		184 54.60%	84 24.90%	46 13.60%	23 6.80%	337 100.00%

expectation of career is not too effective for selection of profession.

According to the graduates, the course of General Accounting, which is received in the Vocational High School, has an important benefit for business life. The courses of the Cooperative Accounting and the Accounting of Foreign Trade Transactions are less useful. These two accounting courses are not beneficial because they are too common in practice.

In the analysis about whether any difference in the sex for the judgments on “my preferring motives for department that I study or graduate from” is or not, the difference among the sexes toward the judgments on “It is a job that necessitates working in discipline and regularity” and “It is a job that necessitates taking a responsibility” appears as ( $p < 0.05$ ) (Table 12). The male students agree with the judgments, “It is a job that necessitates working in discipline and regularity” and “It is a job that necessitates taking a responsibility” more than female students. On the other judgments, there is not any difference between male and female students according to Mann-Whitney U-Test.

The findings on male students prefer it because “It is a job that necessitates working in discipline and regularity” and “It is a job that necessitates taking a responsibility” more than female students are in line with Yardimcioglu and Salvarci’s study, “*The Adequacy and the Preferring Motives of the Vocational High Schools in the Accounting Education: An Application at Selcuk University*”.

52.80% of the students who graduated from a commercial high school and filled the questionnaire selected

**Table 14.** Chi-Square test.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.530 <sup>a</sup>	12	0.821
Likelihood Ratio	10.506	12	0.572
Linear-by-Linear Association	1.19	1	0.275
N of Valid Cases	337		

11 cells (55.0%) have expected count less than 5. The minimum expected count is .14.

the department of Accounting; 24.90%, Management; 15.90%, Banking and Insurance; and 6.40%, Foreign Trade. 54.60% of the total students selected the department of Accounting. Due to the need for the employment of accounting staff, students usually prefer the Department of Accounting.

According to the Chi-Square Test conclusions (Pearson Chi-Square =7,530, Asymp. Sig. (2-sided)= ,821) (Table 14), there is no a significant relationship between the high school that students graduate from and the preferred department.

## CONCLUSION AND SUGGESTIONS

In Turkey, the main purpose of accounting education in

vocational high schools is to prepare the intermediate personnel accountants' need. This study aimed to evaluate the accounting education provided in vocational high schools from the perspective of students, a significant proportion of the students participating in the questionnaire survey. In other words, the vocational high school is considered as a stepping-stone for a transition to faculties. This situation runs counter to satisfying the need of accountants for intermediate personnel. Also, it is believed that the accounting education in vocational high schools will be adversely affected by the fact that the majority of students wish to be engaged in a profession unrelated to accounting, and the fact that the selection of the department of accounting and taxation by the students was, for a significant portion of them, obligatory and consequent to various environmental reasons. Moreover, the fact that many students who participated in the questionnaire report that they would not prefer the same branch/department if given opportunity to restart their vocational high school education indicated that the students are not dissatisfied with their schools.

This study tries to put forward the preferring motives of vocational high school for the students who go to the Social Sciences Vocational High School of Selcuk University and their perspectives on accounting as a profession; and it determines the factors that affect selection of the profession of accounting and to what extent these factors are effective on selecting the occupation.

According to the data of 2012-2013, the number of student in the vocational high schools in Turkey is 1.505.754. The number of student who goes to the Social Sciences Vocational High School is 749.965, and the number of students in the Technical Sciences Vocational High School is 322.704. The others go to the open education. The number of student preferring the department of accounting in the Vocational High Schools of Turkey is 29.6%. Almost one-third of the students of vocational high school prefer the department of accounting.

The students who prefer a vocational high school prefer the vocational high school because they always see it as a necessary department and they want to have a profession. Moreover, 49.2% of the students graduated from a vocational high school work as an intermediate staff. 27,9% of the students who still receive education work in accounting. 35,9% of total surveyed students work as an accountant. The reasons why students studying or graduating chose their departments were assessed by five-point likert scale. According to these results, most of the surveyed students of Vocational High School preferred the department in which they studied because it was a profession always needed. It was among the matters expressed by students as a reason of preferring that it was a business based on trust and a profession requiring responsibility. It was seen that the

surveyed students consciously chose the departments in which they studied and the educational environment of students was effective in the choice of profession. 52.80% of the surveyed students graduating from the commercial high school chose the Department of Accounting; 24.90%, the Department of Management; 15.90%, the department of Banking and Insurance; and 6,40%, the Department of Foreign Trade. 54.60% of the total surveyed students chose the department of Accounting. Due to the staff employment of the market in the accounting department, students mostly preferred the department of accounting.

The employment of accounting in our country where the employment of intermediate staff is dense is on the first rank. The necessary for accounting in the place where money is leads that the markets demand on an accounting staff. In this context, both vocational schools and vocational high schools should make arrangements for the major area courses that students receive, in direction of the demands of markets. If it is opened a course for open fields, it is considered the markets can fulfil their employment of intermediate staff. Additionally, if these studies are applied on the students of vocational high schools in other universities, the research will have been put forward more clearly.

## Conflict of Interests

The authors have not declared any conflict of interests.

## REFERENCES

- Ahmed K, Alam KF, Alam M (1997). 'An empirical study of factors affecting accounting students 'career choice in New Zealand' *Account. Educ.* 6(4):325-335.
- Auyeung P, Sand J (1997). 'Factors Influencing Accounting Students Career Choice: A Cross-Cultural Validation Study' *Account. Education: an Int. J.* 6(1): 13-23.
- Bayazıtılı E, Çelik O (2004). 'First Step in Improving the Quality of Accounting Education: An Analysis of Accounting Activities in Higher Education Institutions' XXIII. Turkey Accounting Education Symposium, Faculty of Management, (19-23).
- Bekçi İ, Titiz İ, Ömürbek N (2006). 'Computerized Accounting Education Students Taking A Research Perspectives on Accounting Courses' *J. Account. Financ. Turkey*, pp. 166-175.
- Byrne M, Willis P (2005). 'Irish Secondary Students' Perceptions of the Work of an Accountant and the Accounting Profession' *Accounting Education; Int. J.* 14(4):367-381.
- Carpenter CG, Strawser RH (1970). 'Job Selection Preference for Accounting Students', *J. Accountancy* 159:84-96.
- Çürük T, Doğan Z (2001). 'Muhasebe Eğitiminin İşletmelerin Taleplerini Karşılama Düzeyi: Türkiye Örneği' *ODTÜ Gelişme Dergisi* 28:281-310.
- Danziger N, Eden Y (2006). 'Student Career Aspirations and Perceptions: The Case of Israeli Accounting Students' *Account. Educ. Int. J.* 15(2):m113-134.
- Demir M (2003). 'Vocational School of Accounting Program Internship Job Men-super in Terms of Assessment - A Survey' *J. Account. Finance-Turkey, Nisan*, pp. 129-137.

- Gençtürk M, Bağcı Y (2005). 'Vocational Schools and Teaching Staff Profile' 3th of National Vocational Schools Symposium, September, pp. 22-31.
- Guclu F (2004). 'Vocational Schools in terms of Accounting Education Hacettepe University, Ankara Vocational School Experience' [www.isletme.istanbul.edu.tr/surekli\\_yayinlar/tmes\\_2004\\_bildiri11.doc](http://www.isletme.istanbul.edu.tr/surekli_yayinlar/tmes_2004_bildiri11.doc) (14.02.2014).
- İbicioğlu H, Doğan H (2003). 'Süleyman Demirel University, connected the Quality of Vocational Training Programs in High School and a Research on the Competitiveness' Journal of Faculty of Economics and Administrative Sciences of Suleyman Demirel University, 8(3):1-13.
- Karcioglu R, Ertaş FC (1996). 'Evaluation of the Development of Professional Accountancy Profession Education and Experience Requirements' Tax World Magazine -Turkey, Eylül, pp.85-101.
- Paksoy H, Akbulut M. ve Ramazan AV (2005). 'Occupation Investigation Special Harran University of Adequacy of Accounting Education in High School and An Evaluation Of The Future' J. Account. Control at a Glance-Turkey, Mayıs, pp.73-105.
- Paolillo J, Estes R (1982). 'An Empirical Analysis of Career Choice Factors Among Accountants, Attorneys, Engineers and Physicians' Account. Rev., 57(4): 785-793.
- Smyth E, Hannan C (2000). 'Spoilt for Choice School Factors and Third-Level Entry Seminar Paper' Dublin: The Economic and Social Research Institute
- Yardımcıoğlu M, Buyuksalvarcı A (2007). 'Competence of Vocational Training in Accounting and the Reasons of Preference: An Application at Selcuk University' J. Account. Finance-Turkey 36:173-178.
- Yayla HE, Cengiz E (2005). 'In the choice of the Accounting Profession For A Field Study of the Determination of Effective Factors: The Case of Karadeniz Technical University' J. Account. Control at a Glance-Turkey, Eylül, pp. 147-168.
- Yılmaz S, Ciger A (2004). 'Globalization and the Quest for Quality Associate Degree in Accounting Education' [www.isletme.istanbul.edu.tr/surekli\\_yayinlar/tmes\\_2004\\_bildiri13.doc](http://www.isletme.istanbul.edu.tr/surekli_yayinlar/tmes_2004_bildiri13.doc) (02.01.2014).

*Full Length Research Paper*

# An assessment of the economic viability of ecological coffee processing technology in Cameroon

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Coffee is an important crop in Cameroon in terms of income and employment generation. Productivity of coffee has been declining over time with a consequent decline in the corresponding incomes. The Government of Cameroon is addressing this shortfall through a number of measures, a key one being introduction of four pilot central pulping units (CPUs). This paper assesses the technical, economic and commercial sustainability of the CPUs. There was good capacity utilization among all the CPUs as indicated by no significant difference ( $p>0.05$ ) between the model specification and what the CPUs actually achieved. The main approach for increasing capacity utilization is processing more coffee per day, utilizing more days and hours on each processing day. It is possible for the CPUs to perform better under improved conditions of red cherry delivery. All the CPUs except one were commercially viable in the trial phase. The exceptional non-viability was due to management problems, but projections assuming good management demonstrated that it would be commercially viable in the long run. Coffee processed was above the breakeven quantities. Given improvements in the production levels, the cooperatives in charge of the CPUs can purchase the CPUs. Net benefits accruing to the use of the CPUs were higher than those derived from other processing practices. Coffee growers' perceptions, technical efficiency and commercial viability lend support to sustainability of the CPUs. There is need to encourage the coffee growers to increase the supply of coffee to the CPUs. Capacity building is required to improve financial and labour management among the cooperatives that are in charge of the CPUs.

**Key words:** Processing, technology, benefits, sustainability, efficiency, profitability, pulping.

## INTRODUCTION

Coffee is the primary source of cash income for thousands of households in the rural areas and provides livelihoods to many others across the supply chain in Cameroon. The crop generates foreign currency earnings and provides employment to the rural communities. The

commodity forms an important income generating activity for smallholder producers, with an estimated 400,000 households, representing about 2.8 million people, deriving their livelihoods from the cultivation of the crop (RoC, 2009b). The bulk of Cameroon's production is

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Robusta coffee. The ratio of Robusta/Arabica production in the country is currently estimated to be 9/1. The coffee sector's significance and importance in Cameroon has undergone drastic decline since the 1980s when the crop was the largest agricultural export commodity in terms of volume and a primary source of cash income for an estimated 400,000 rural households (World Bank, 2010). Production of the commodity has declined over the last three to four decades from an average of 100,000 metric tonnes annually to just over 40,000 tonnes by 2010 (World Bank, 2010). According to the World Bank (2010), a number of factors contributed to the value and volume of coffee exports from Cameroon. The liberalization of the coffee sector, the steep and prolonged decline in international coffee prices, the collapse of Cameroon's coffee cooperative system, and the rapid entry and exodus of private operators were some of the major shocks experienced by the Cameroon coffee industry over the past 20 years. As a result, coffee production declined from a peak of 146,848 tons in 1987/88 to 31,524 tons in 2007/08. This decline was further accentuated by the poor world prices for the commodity experienced in the mid 80s and early 90s which led to the neglect of coffee farming by the smallholders. The value of exports for the country likewise declined over time, falling from a peak of US\$ 302,654,000 in 1980 to about US\$ 66,000,000 by 2010 (FAOSTAT 2012).

To address the declining performance of the coffee sub-sector, the Government of Cameroon has put in place initiatives to revive the coffee sub-sector in the country as outlined in the coffee sector development strategy 2010 – 2015 (RoC, 2009b). The initiatives involve the enhancement of both production/productivity and quality of coffee, leading to increased export of high quality coffee and subsequently increased export earnings. One element of these efforts involves introduction of Central Pulping Units (CPUs), whose establishment is meant to contribute immensely to the improvement of the quality of Cameroon coffees.

The Government of Cameroon, with financial support from the European Commission's (EC) All African, Caribbean and Pacific (ACP) Agricultural Commodities Programme (AAACP) and the World Bank, installed four pilot Central Processing Units (CPUs) in the East, North-West, West and South-West regions of the country. The pilot centres are based on small ecological coffee pulping equipment and are aimed at producing high quality fully washed Robusta and Arabica coffees. In addition, the use of the equipment was meant to increase access to improved coffee pulping facilities by the smallholders, reduce the cost of coffee processing, minimise environmental pollution associated with the use of large traditional coffee washing stations and to provide viable alternatives to the hand pulpers commonly used in some parts of the country. Two of the Pilot CPUs were installed

in the Arabica coffee areas, while the other two were installed in the Robusta coffee zones. Assessing performance of the CPUs was considered necessary to establish their economic and commercial viability and how they compare with the existing coffee processing practices. This paper reports results and inferences of an economic assessment of the CPUs, an innovative coffee processing technology in Cameroon. The paper proceeds in this endeavour by examining the efficiency, commercial viability and sustainability as well as the farmer perceptions of the CPUs.

## LITERATURE REVIEW

Coffee quality is affected by pre and post-harvest practices (Abrar et al., 2014). It is estimated that 40% of the quality of coffee is determined in the field, 40% at post-harvest primary processing, and 20% at secondary/export processing and handling including storage. Primary coffee processing, which is the production of green beans from the coffee fruits is practised to bring out more flavour (Chanakya and De Alwis, 2004). The main methods of primary coffee processing are wet processing, sun-dried (natural) and semi-washed coffee processing. Most of coffee in Cameroon is processed using the sun-dried method. Fully washed Arabica has demonstrated in the previous 3 years to have a market which would pay significant premiums. The small quantity produced readily found markets internationally; though at present produced through classic Coffee Washing Stations (CWS) (RoC, 2009a). Currently there is no production of washed Robusta in Cameroon (RoC, 2009a). This is despite the fact that washed Robusta coffees fetch higher prices in the international market hence present a profitable opportunity in the market for improved Robusta qualities which could be achieved with a modest investment. Production of centrally processed washed Arabica and Robusta coffees should open up new markets for Cameroon coffee (RoC, 2009a). Hitherto, only Arabica coffee is processed using central coffee washing stations (CWS).

The classic CWS require a considerable investment, use high volumes of water, and require a large volume of fresh cherry to run at reasonable capacity utilization. In the case of Belo in North West Cameroon, processing is traditionally done using hand-driven pulpers. Most farmers nevertheless do not have their own pulping facilities, with an estimated 56% renting the equipment (Kuit et al., 2008). Harvested coffee can therefore wait for up to 5 days due to the scarcity of the pulping facilities, with significant negative impact on the quality. Introduction of the modern CPUs was expected to overcome such challenges and hence improve the quality of coffee which subsequently attracts better income.

Modern smaller Central processing units (CPUs) therefore present an interesting opportunity since they are amenable to low throughput operations. They are economically viable with much lower volumes of cherry due to their smaller infrastructure and lighter investment. In addition, they require lower volumes of water, using typically 10 – 20% of the water required in a classic CWS (Gonzalo et al., 1995; Ulf, 2004; Cornelius, 2011). This is due to the mechanical removal of mucilage, which eliminates the need for fermentation and washing associated with the classic CWS. This greatly simplifies and speeds up the processing. Less infrastructure/construction – and therefore less investment – is required. It is reasonable to expect 20 – 30% uplift in the value of the finished product, due to its better primary processing and drying.

Smaller modern central processing units (CPUs) using ecological pulpers with mechanical mucilage removers are being piloted in Cameroon. This ecological coffee processing technology is meant to increase the quantity of quality coffee processed and hence the earnings of the coffee growers. Establishing the viability of such technology is necessary to assure continued investment and use. Agronomically and economically sustainable coffee production is feasible by applying best practices of crop production and post-harvest processing (Vossen, 2005). Coffee production practices have been used effectively in their different forms but the processing activities have not exploited the full range of methods in Cameroon. This justifies the need for using small modern CPUs as viable alternatives to the different coffee processing methods.

Studies in Rwanda and Ethiopia revealed that putting in place coffee washing stations, which are necessary to produce high quality coffee, could contribute positively to improving coffee productivity at the farm level (Murekezi, 2003). This line of thought supported the need to examine the economic viability of the CPUs, which would contribute to the coffee growers' incomes and the drive to increase coffee productivity. The key drive towards the use of CPUs is the reduced costs of coffee processing. This is due to the fact that globally the growing demand for specialty or sustainability coffee with the associated premium prices should serve as incentive for coffee washing stations to reform (Kazoora, 2011). However, it is imperative that the premium prices trickle down to farmers as well to encourage improved production at the farm level. This is in line with Cameroon's National Strategic Plan for Coffee which was officially adopted by the Government of Cameroon in 2009. The strategy envisages improved exports and export earnings based on a quality platform (RoC, 2009b). From a functional point of view, the ecological pulpers are amenable to a variety of production levels and can therefore be installed to service a small number of smallholders without the risk of running the equipment under capacity (Gonzalo et al., 1995; Ulf Kusserow, 2004). This can increase the proximity

of the CPUs to the smallholders thereby reduce the cost and effort required to deliver cherry to a wet processing plant, hence encouraging the subscription of the smallholders to the CPUs. Success in this endeavour requires a clear appreciation of the financial implications of using the technology. This is because the coffee growers are rational and would not engage in the use of technology that does not generate the necessary financial returns. Use of the CPUs is expected to be more environmentally sustainable as well as bringing added value to the producers. It would also add to the pool of improved wet processing technologies in Cameroon. Success in all respects would be determined by the viability of the technology, which is the thrust of this paper. Marketing of the good quality coffee can be an issue that could interfere with the viability of such a technology. Farmers can raise their productivity and improve their processing skills but if there is no market for their coffee at better prices, then they will revert to selling dried cherries. The CPUs in Cameroon had an associated marketing component where the owners were linked to prospective buyers of the coffee. The question that arose in this regard is whether the assumed incomes pegged on the costs of the technology would be consistent with sustainability endeavours.

## MATERIALS AND METHODS

The assessment involved aggregating monetary values of the benefits and costs to the CPUs which were then compared with those of the conventional coffee processing methods in order to establish whether the CPUs are worthwhile (Watkins, 2006). This was undertaken by comparing the difference between the situation in the study area with and without the CPUs as well as assessing the cost effectiveness of operating the CPUs. Costs and benefits for existing processing methods as well as those for the CPUs were computed and the net benefits compared to establish the efficiency of operating the CPUs (Ostertag and Wheatly, 1995; Ferris et al., 2001; Gittinger, 1984). The analyses involved evaluating the CPUs against the existing coffee processing systems in order to assess their competitiveness and prospects for sustainability.

Structured data collection checklists were used to gather data from each of the CPUs. The data included direct operating costs such as labour costs, repairs and maintenance costs, fuel costs, transport costs, farmer perceptions about the CPUs, numbers of growers supplying coffee to the CPUs, coffee prices and coffee sales. Data were collected in West Region (Bandjoun CPU) and North West Region (Belo CPU), which are the regions involved in the production of Arabica coffee as well as the South West Region (Chede CPU) and East Region (Angossas CPU) that are involved in the production of Robusta coffee. Data collected were analysed using descriptive statistics.

## RESULTS AND DISCUSSION

### Pilot Central Pulping Units

The analysis involved four pilot CPUs. During the 2011/2012 coffee harvesting season, one CPU was

**Table 1.** Pilot CPUs involved in the cost–benefit analysis, 2011/2012.

Pilot site	Name of CPU	Type of coffee processed	Parchment processed (Kg)
West	Bandjoun	Arabica	12,000
North West	Belo	Arabica	9,500
South West	Chede	Robusta	18,750
East	Angossas (GIC)	Robusta	4,600

installed in each of the pilot sites (Table 1). The Cooperatives and the Groupement d'Intérêt Commun (GIC) which own the CPUs are legally constituted under the laws governing the cooperative movement in Cameroon.

### Capacity utilization and operating efficiency of the CPUs

According to the model specification, the estimated capacity of the pulping and mucilage removing machine was 400 kg of cherry per hour for the CPUs installed in Bandjoun and Belo. Working for 6 h per day for 60 pulping days in a season; this translates to 2400 kg cherry per day that gives a total of 144,000 kg cherry per season which is equivalent to 28,800 kg of green coffee (assuming a conversion ratio of 5kg cherry to 1kg green coffee). In the case of Angossas and Chede the estimated capacity of the pulping and mucilage removing machine is 800 kg cherry per hour, working for 6 h per day for 60 pulping days in a season. This translates to 4,800 kg cherry per day that gives a total of 288,000 kg cherry per season, which is 57,600 kg of green coffee.

The efficiency of operating the CPUs is determined by capacity utilization, quality of coffee processed and the maintenance requirements. For purposes of this study efficiency was assessed based on capacity utilization. Capacity utilization achieved was 26.4, 33.3, 6.4 and 20.8% for Belo, Bandjoun, Angossas and Chede respectively (Table 2). In all the cases, the CPUs operated for less than 6 h per day. Only Chede and Belo operated for the stipulated 60 days during the 2011/2012 coffee campaign. This was due to repeated down time resulting from breakages of the CPUs in all the pilot sites except Belo. In addition, inadequate supply of cherries from the coffee growers made it impossible to pulp 2,400 kg per day for CPUs in the Arabica sites and 4,800 kg per day for Robusta CPUs as per the manufacturers' indicated capacity. There was also late access to funds for purchasing the red cherries from the farmers in Belo and Angossas. Low season due to the biennial nature of coffee, as well as farm gate competition with middlemen and the need for the farmers to hold against risk given that this was a new innovation, also contributed to less cherries being processed. Not all the coffee growers supplied their coffee to the CPUs. Those who supplied

coffee to the CPUs only gave a fraction of the coffee that they produced to the CPUs. Long distance to the CPUs, lack of transport and high cost of transport also interfered with processing capacity.

Increasing capacity utilisation is expected to result into a concomitant increase in net profit to the CPUs (Table 2). For the Arabica producing sites for example, the rate of increase in the net benefits resulting from a rise in capacity utilisation from 50 to 75% is estimated at 63% in Belo and 65% in Bandjoun.

Similarly, the rate of increase in the net benefits resulting from a rise in capacity utilisation from 50 to 75% for Chede is estimated at 69% compared to that of Angossas (67%). Enhanced capacity utilisation should therefore be a key consideration when installing new CPUs. This can be achieved through moral persuasion to catalyse the growers to supply more cherry coffee to the CPUs. To facilitate this process transport of the red cherries from the coffee farms or designated collection points to the CPUs will be required. Timely access to funds for purchasing cherry is equally critical in fostering better capacity utilisation at the CPUs. The CPU at Belo for instance, could have registered better capacity utilisations if cherry finance became available at the onset of the coffee harvesting season.

Reaching 100% capacity utilisation will require greater discipline in the CPU management. Timely maintenance and repairs of the CPUs will have to be guaranteed in order to reduce machine down time. Arrangements should also be made for work on shifts, especially in case more coffee than can be processed in the day is made available. Capacity building in good agricultural practices, proper management of cooperatives and timely access to funds to purchase the red cherries as well as efficient operations of the CPUs are crucial.

A comparison of capacity utilization based on manufacturer's specification (Table 2) and that based on actual number of days that the CPUs processed coffee (Table 3) shows that they are not significantly different ( $t_{0.025} = 1.47$ ,  $p > 0.05$ ). This comparison indicates that a key approach to achieving capacity utilization is processing more coffee per day and at the same time utilizing more hours for processing on each processing day as well as more processing days. The farmers also need to increase coffee deliveries to the cooperatives. This can be achieved by increasing production and

**Table 2.** Effect of capacity utilisation on the net benefits for the four CPUs in Cameroon.

Name of CPU	Expected green coffee (kg) at 100% capacity utilization	Green coffee (kg) at various capacity utilizations	Capacity utilization (%)	Net income (CFA) at current price of green coffee
Belo	28,800	7,600	26.4*	6,264,626
	28,800	14,400	50	15,102,226
	28,800	21,600	75	24,671,026
	28,800	28,800	100	34,239,826
	28,800	9,600	33.3*	8,199,428
Bandjoun	28,800	14,400	50	14,566,471
	28,800	21,600	75	24,034,471
	28,800	28,800	100	33,502,471
	57,600	3,700	6.4*	-2,349,959
Angossas	57,600	28,800	50	11,431,696
	57,600	43,200	75	19,337,296
	57,600	57,600	100	27,242,896
Chede	57,600	15,000	26.0*	4,462,002
	57,600	28,800	50	12,692,252
	57,600	43,200	75	21,274,652
	57,600	57,600	100	29,857,052
	57,600	57,600	100	29,857,052

Note: \* depicts achieved capacity utilization. Current price is 2400 CFA /kg for Arabica and 1200 CFA/kg for Robusta processed through the CPUs; 1 US\$ = 500FCFA.

**Table 3.** Coffee pulped, actual number of days worked and capacity utilization.

Name of CPU	Days worked		Coffee pulped (kg)		
	Projected	Actual	Projected based on 6 hrs. per day for 60 days	Actual	% capacity utilization
Angossas	60	35	33,600	3,700	11.1
Chede	60	60	57,600	15,000	26.0
Bandjoun	60	47	22,560	9,600	42.6
Belo	60	61	29,280	7,600	25.9

productivity of coffee by being proactive in the use of good agricultural practices. Under the aforesaid circumstances the technical optimum envisaged based on the manufacturer's specification for the machines can be realised with the associated benefits to the CPUs and members of the cooperatives.

### Commercial viability of CPUs

The commercial viability of the CPUs was assessed based on the costs and benefits of the CPUs and was determined by the ability of the CPUs to generate returns in excess of what is required for operation and maintenance. The disaggregated variable costs considered were storage costs, maintenance and repair costs, operation and water costs (Table 4). Other costs are for wire mesh, sacks/bags, drying materials, labour costs for loading into the CPUs and drying costs. Fixed costs are

those associated with the equipment purchase and installation (Table 5).

In the assessment of commercial viability; fixed costs arising from investment in the CPU are computed for each year as a derivative of investment costs using straight line depreciation. Assuming a useful life of 5 years and zero salvage value the corresponding fixed costs are 3,839,079 CFA, 3,215,374 CFA, 3,764,734 CFA and 3,952,548 CFA for Bandjoun, Belo, Angossas and Chede respectively.

A comparison of gross income (Table 6) and total costs for each of the CPUs (Tables 4 and 5) shows that Bandjoun, Belo and Chede are commercially viable with positive net benefits of 8,199,428 CFA; 6,264,626 CFA; 4,462,002 CFA respectively. Angossas is not commercially viable at the current level of capacity utilization. It made a loss of 2,349,959 CFA. This is possible because Angossas operated for only 35 days out of the expected 60 days and even then the turnover was marginal. Out of



**Table 4.** Costs of running the Pilot CPUs (FCFA).

Description of cost item	Belo	Bandjoun	Angossas	Chede
Fixed costs				
Manager	360,000	416,000	239,770	225,000
Accountant/ clerk	180,000	0	0	70,000
Technician	100,000	114,450	325,000	90,000
Store keeper	180,000	0	0	75,000
Security guard	0	0	50,000	60,000
Total fixed costs	820,000	530,450	614,770	520,000
Variable costs				
Labour (drying, grading, fermentation, etc.)	0	179,250	0	167,500
Maintenance & repairs	120,000	121,800	77,350	180,000
Operation (fuel, electricity, etc.)	120,000	509,993	195,500	540,000
Storage (labels, bags, drying, etc.)	240,000	0	0	318,700
Overhead and other costs	0	0	257,605	154,250
Quantity of water (costs)	60,000	0	30,000	132,400
Other costs	0	0	0	572,600
Total variable costs	540,000	811,043	560,455	2,065,450
Total cost	1,360,000	1,341,493	1,175,225	2,585,450

1 US\$ = 500FCFA.

**Table 5.** Investment/ fixed costs for the CPUs (FCFA).

Description	Bandjoun	Belo	Angossas	Chede
Ecological pulping unit	4,626,250	4,626,250	4,851,250	4,851,250
Shipping charges	112,500	112,500	137,500	137,500
Delivery in-country (air freight)	1,530,000	1,530,000	1,802,500	1,802,500
Customs and transit	198,500	198,500	198,500	198,500
Delivery to CPUs site	411,000	616,500	381,000	570,000
Site Constructions*	12,317,146	8,993,120	11,452,920	12,202,988
Total	19,195,396	16,076,870	18,823,670	19,762,738

1 US\$ = 500FCFA. \* Constructions costs include drying tables, generating set, cables and electrical, installation, water pump, small building, trays, construction costs, and installation.

a total of 850 active members only 68 supplied red cherries to the CPU. This may be explained by limited group cohesion and low appreciation of the benefits expected from the CPUs. Such a scenario exists where there are management and leadership issues. In this case leadership problems may have contributed to this situation. Good leadership is expected to encourage group cohesion which would give confidence to the members to work as a team. The kind of leadership in Angossas does not warrant investment in CPU for the cooperative. If management is improved and more coffee growers supply coffee to the CPU it is possible for it to become commercially viable. Given the understanding that members of the cooperatives would be given a bonus after the sale of the processed coffee it is in

principle beneficial for the coffee growers who process their coffee using the CPUs in terms of monetary returns and the time saved that is used for other activities.

The variable costs per kg of green coffee equivalent from the Arabica CPUs were an average of 1,085 CFA for Bandjoun and 1,071 CFA for Belo compared to 1,022 CFA for ordinary pulped coffee. The variable costs for the CPUs are higher than the costs of the conventional processing methods using hand pulpers. However, price per kg of green Arabica Coffee equivalent (2,400 CFA) from the CPUs is more than the price (1800 CFA) from ordinary pulped Arabica Coffee, which indicates that it is more profitable to undertake Arabica Coffee processing using the CPUs compared to the existing traditional processing using hand pulpers. The comparison is made

**Table 6.** Processing and sales of parchment/ green coffee from the CPUs.

Description of variable	Name of the Central Processing Unit (CPU)			
	Bandjoun	Belo	Angossas	Chede
No of Active members	3,500	5,000	850	150
Average cherry yield per grower per year (Kg)	945	522	1,375	1,760
Expected cherry (KG) - 100% growers supplying	3,307,500	2,610,000	1,168,750	264,000
Actual cherry purchased (kg)	48,300	37,000	18,500	70,000
Price of cherries (CFA/kg)	200	200	100	100
Total cost of cherries (CFA)	9,660,000	7,400,000	1,850,000	7,000,000
Other variable costs (CFA)	811,043	540,000	560,455	2,065,450
Total variable costs (CFA)	10,471,043	7,940,000	2,410,455	9,065,450
Variable cost per kg of green coffee (CFA)	1,091	1,045	651	604
Parchment processed	12,000	9,500	4,600	18,750
Green coffee sold (kg)	9,600	7,600	3,700	15,000
Price per kg of green coffee (CFA)	2,400	2,400	1,200	1,200
Gross income from green coffee (CFA)	23,040,000	18,240,000	4,440,000	18,000,000

1 US\$ = 500FCFA.

on assumption that both the conventional method and the CPUs will process the same amount of red cherries that would have been purchased at the same price.

For the Robusta processing the variable costs of the CPUs are higher than the costs for traditional processing of coffee; that is an average of 651 CFA per kg of green coffee in Angossas and 604 CFA per kg of green coffee in Chede; compared to an average of 519 CFA per kg of green coffee equivalent from growers' current processing practices. The comparison is made under the assumption that coffee which is sun dried is purchased at 100 CFA per kg and both methods process the same amount of red cherries. Price per kg of green Robusta Coffee equivalent (1,200 CFA) from the CPUs is more than the price (800 CFA) from traditional processing of Robusta Coffee. This indicates that it is more profitable to undertake Robusta Coffee processing using the CPUs compared to the existing traditional processing by sun drying.

### Amortization of the CPUs

In the event that the cooperatives that own the CPUs wish to purchase additional CPUs based on capacity and quantities of red cherries that the coffee growers would be willing to supply, it would be necessary to compute the repayments. This being an agricultural project the suggested repayment should be in terms of annual instalments. The interest would be computed on unpaid balance and there would be level payments. In the computation of level (equal) annual payments the formula specified below is used (Gutierrez and Dalsted, 2007;

Lee et al., 1988).

$$\text{Annual instalments} = \text{Initial investment} \left[ \frac{i}{1 - (1 + i)^{-n}} \right]$$

Where i = commercial interest rate

n= period over which the initial investment is to be repaid in years

Computing the average benefits for different capacity utilization of the CPUs and using the initial investment costs; and a commercial interest rate of 20% the Arabica CPUs would be repaid in a period of 4 years at the current capacity utilization. If capacity utilization is improved it is possible to repay in a shorter time. For instance at a capacity utilization of 75%, repayment would be in 1 year for Bandjoun and Belo respectively (Table 7). Angossas will have repayment problems if they decided to purchase a CPU at the current capacity utilization. If management is improved and more members supply red cherry to Angossas, it is possible to repay for the CPU if the cooperative is interested in buying one. For instance if capacity utilization in Angossas is increased to 75% it is possible to repay for the CPU in 2 years. At the current capacity utilization Chede would repay within a period of 12 years. Increasing capacity utilization to 75% would enable repayment in 2 years for Chede. At 100% capacity utilization all the CPUs can repay in a period of 1 year and use the remaining useful years of the equipment for generating profits for their own use. This means that use of CPUs can be adopted with better benefits for both Arabica and Robusta coffees.

**Table 7.** Amortization for the different CPUs (FCFA).

Description of variables	Bandjoun (43% utilization)	Bandjoun (50% utilization)	Bandjoun (75% utilization)	Bandjoun (100% utilization)	Belo (26% utilization)	Belo (50% utilization)	Belo (75% utilization)	Belo (100% utilization)
Initial investment (CFA)	19,195,396	19,195,396	19,195,396	19,195,396	16,076,870	16,076,870	16,076,870	16,076,870
Annual interest rate (%)	20	20	20	20	20	20	20	20
Benefits from CPUs utilization	8,199,428	14,566,471	24,034,471	33,502,471	6,264,626	15,102,226	24,671,026	34,239,826
Repayment period years	3.5	2	1	1	4	2	1	1
Description of variables	Angossas (11% utilization)	Angossas (50% utilization)	Angossas (75% utilization)	Angossas (100% utilization)	Chede (21% utilization)	Chede (50% utilization)	Chede (75% utilization)	Chede (100% utilization)
Initial investment (CFA)	18,823,670	18,823,670	18,823,670	18,823,670	19,762,738	19,762,738	19,762,738	19,762,738
Annual interest rate (%)	20	20	20	20	20	20	20	20
Benefits from CPUs utilization	-2,349,959	11,431,696	19,337,296	27,242,896	4,462,002	12,692,252	21,274,652	29,857,052
Repayment period years	Unable to repay	4	2	1	12	4	2	1

1 US\$ = 500FCFA.

### Farmers' perceptions of the CPUs

Assessment at each of the CPUs revealed that farmers were interested in supplying coffee to the CPUs and were willing to form other associations that would request for other CPUs to avoid congestion in the ones already installed. There were no limits on the number of members that would belong to each of the CPUs. It is expected that the membership would increase or be maintained at the initial level but this is an issue that will require to be checked over time given cooperative sustainability, governance, distance of the coffee growers from the CPUs, as well as changing coffee production and sales scenarios. This means that efforts to assure sustainability of the cooperatives need to be effected. Among these are increased production and productivity of coffee.

The coffee growers in the different regions indicated that they were aware of the central processing units (CPUs). According to the farmers, adoption of the CPUs would reduce the work load of drying coffee. This is because after harvesting; the red cherries would be transferred to the CPUs and farmers would have time for

other activities. Alternatively the producers expect that use of the CPUs would produce high quality coffee, which would generate more farm income and hence generate more benefits for the farmers. Farmers noted that they would not be able to effectively utilize the CPUs due to a number of reasons. The CPUs were located far away from the coffee growers and were relatively few in number. Poor road network interfered with the coffee growers' efforts to effectively deliver red cherries to the CPUs.

The coffee growers reported that they would be interested in owning the CPUs and would contribute to the maintenance of the CPUs through delivery of red cherries and pooling of resources for use in repairs and payment of the operators. Farmers were willing to pay processing fees so long as these would be deducted from the proceeds of their coffee sales and not direct payments. Farmers expected that even after the deductions there should be reasonable net benefits to justify selling coffee to the CPUs. There was preference for the modern small CPUs compared to other coffee processing methods.

**Table 8.** Shut down prices for different CPUs.

Name of CPU	Shutdown price (CFA/ kg)
Bandjoun	1,388
Belo	1,446
Chede	1,081
Angossas	1,044

1 \$ = 500FCFA.

### Sustainability of CPUs

Sustainability of the CPUs is determined by a combination of factors such as operational efficiency, commercial viability and farmers' acceptance of the processing technology. This involves an assessment of the farmers' perceptions of the CPUs and their willingness to supply coffee to the CPUs. It is also determined by the buyers' preference for the coffee processed by the CPUs compared to the other processing methods. Given the growers' preference for the CPUs it is apparent that they will be sustainable in the long run.

Discussions with the coffee growers revealed that a key reason for the growers' preference for the CPUs is that they reduce the labour required for drying the coffee, thereby releasing labour for use in other activities. The CPUs require less water, meaning that they could be used in a wide range of areas. The Arabica CPUs bought red cherries at 200 CFA per kg which converts to 1000 CFA per kg of green coffee. The processed coffee was sold at 2400 CFA per kg. The difference in the prices is expected to cater for the processing costs and other maintenance and operation costs including payment for skilled and unskilled labour as well as generate profits for the cooperatives.

Break-even analysis was carried out to determine the quantity below which pulped coffee processing would become unprofitable in the context of sustainability. The analysis was conducted using the prices given for green coffee equivalent to compute break-even amounts. The break-even quantity was obtained using the formula:

$$Q = \frac{FC}{P - VC}$$

Where: Q = quantity of green coffee in kg needed to breakeven

FC= fixed costs

P = price per kg of green coffee

VC= variable costs per kg of green coffee

The price per kg of green coffee equivalent was 2400 CFA and 1,200 CFA for eco-pulped Arabica and Robusta coffee respectively compared to 1600 CFA and 800 CFA for Arabica and Robusta coffee processed using the

conventional methods. The variable costs per kg of green coffee from the CPUs were computed from data obtained from each of the CPUs and are given in Table 4. Using the formula above, the breakeven quantity is computed based on the fixed costs (Table 5) on the understanding that the useful life of the CPUs is 5 years with a salvage value of zero and straight line depreciation is used. The number of units of green coffee needed to break-even is given as 3,337kg for Bandjoun, 2,978 kg for Belo, 7,509 kg for Chede and 7,984 kg for Angossas.

The average quantity of parchment processed by each of the CPUs was as indicated in Table 6. The maximum quantities of parchment expected to be processed according to the manufacturer's specifications for the Arabica CPUs is 144,000 Kg, which translates to 28,800 kg of green coffee for each of the CPUs and 288,000 Kg for the Robusta CPUs which translates to 57,600 kg of green coffee for each of the CPUs. The breakeven figures mean that for sustainability purposes the minimum amounts of coffee to be processed are 3,337, 2,978, 7,509, and 7,984 kg of green coffee for Bandjoun, Belo, Chede and Angossas respectively. High volumes of pulped coffee produced in some cases show that potential exists and that all farmers can benefit given timely start of processing using the CPUs. In this initial case, Angossas processed quantities that were less than the breakeven quantities. Other CPUs processed coffee well above the break even quantities and made profit in this initial instance.

Actual quantities of green coffee equivalent produced by the CPUs (Table 6) indicate that they are financially sustainable and can improve on sustainability in terms of processing given the cherry production levels by the coffee growers. Given improved capacity utilization Angossas is also financially sustainable.

Sensitivity analysis reveals that CPUs that process relatively less eco-pulped coffee would require higher prices to be able to breakeven, while those that process more would require lower prices to breakeven. When the variable costs are reduced below the current levels, it is possible to break even at relatively lower quantities of processed coffee. Higher prices may not be tenable given the current marketing system.

For the CPUs to operate over the long run, they must be able to cover both fixed and variable costs. Thus at full capacity utilization and current variable and fixed costs, prices below the levels specified in Table 8 would lead to shut down, that is closure of the CPUs. Below the stated prices, the CPUs will be of no good to the cooperatives.

For sustainability purposes, farmers will have to produce greater quantities of cherries and the CPUs will need to process more coffee. There would be need for relatively high prices in the cases of less coffee being processed. Since prices are volatile, there is need to assure improvements in production, productivity and deliveries to the CPUs. Efficiency in production should be

considered for purposes of increasing incomes after the break-even levels have already been achieved, using the recommended production and processing practices. Given the limited control over prices, it is necessary for the CPUs to strive to process as much coffee as possible coupled with cost reduction measures. These include efficiency in finance and labour management. There is potential for production of higher volumes of eco-pulped coffee, as attested to by the maximum quantity of red cherries that could potentially be delivered by all growers expected to supply the respective CPUs. If the full coffee production from all the coffee growers is exploited, there will be need for more CPUs in all the pilot project areas and beyond depending on interest of the other coffee growers.

However, there are some challenges to the sustainability of the CPUs that need to be addressed. Among these are marketing of coffee by the respective CPUs, labour and financial management, water shortage, electricity and maintenance of the CPUs. With regard to marketing, there is an agreement between the groups that own the CPUs and coffee buying agents to purchase the coffee. The CPUs reported that water shortage was a challenge to sustainability. Water supplied was inadequate for processing purposes in some CPUs. The water sources supplied less water. Water limitation may be addressed by ensuring that there is adequate water storage capacity for processing purposes.

Maintenance of the CPUs and supply of electricity posed another challenge. In some instances the generators broke down unexpectedly. All these underscore the need for proper maintenance to forestall breakdown of the CPUs, which could interfere with the processing activities. Labour and financial limitations were also reported as constraints in the use of CPUs. Marketing of coffee processed by the respective CPUs, management of the CPUs and technical know-how are some other issues that require consideration. This in essence calls for training in order to build the requisite capacity, and assuring access to production and marketing information.

## Conclusion

The CPUs achieved good financial viability, which means that the CPUs are commercially viable, except Angossas, at the current levels of processing. Even then, Angossas can still breakeven if costs are reduced and/or more capacity utilization is achieved. The CPUs processed coffee beyond the breakeven quantities indicating relatively good profitability for the current operation levels. The breakdowns in some of the CPUs point to the need to put in place proper mechanisms for maintenance of the CPUs, user efficiency and more versatile machines. Managers of the CPUs as well as the team in charge of the cooperatives require training to assure

efficiency in operations. There is high potential for improving profitability, given the coffee production capacity of the members of the cooperatives that were supplied with the pilot CPUs. Thus, as the CPUs continue processing more coffee, better positive returns would be achieved.

The breakdowns in some of the CPUs point to two issues: (i) Prior assessment of suitability of the processing equipment to be installed in the CPUs is crucial. In particular, the equipment should have acceptable level of durability and versatility to reduce disruptions during the processing season arising from mechanical breakdowns. Local availability of service parts is also an important element when considering the use of a given type of CPU equipment on a larger scale. (ii) There is need to have a pool of artisans with experience in the installation and repair of the CPU equipment. Consequently, in addition to the training offered to the CPU machine operators, deliberate training should be given to the local artisans with whom the parent producer organisation hosting the CPU have working relations. In many instances, the cooperatives have in-house mechanics. These should also be a target of training on the installation and repair of the CPU machines.

Technical efficiency achieved in this initial campaign is commendable, given that this is a new technology that would require some time for adoption of the practices. The reasons leading to the indicated performance can be addressed during subsequent years of operation of the CPUs. Cooperative members need to be enlightened about the need to sell their red cherries to the CPUs, and on the other hand the CPUs require funding for purchasing the red cherries. Interested stakeholders including the government should be sought. Depending on the financial base of the cooperatives and level of trust, some CPUs may obtain red cherries on credit from the coffee growers. Repairs and maintenance of the CPUs need to be conducted in time, meaning that proper links should be established with all those involved in undertaking the repairs and maintenance.

The reported initial profitability and technical efficiency levels coupled with the growers' interest and commitment indicate that the CPUs would be sustainable in the long run. Profitability and technical efficiency may be improved further through capacity building in terms of training and financial support to the cooperatives. Quality of coffee from the CPUs was rated better compared to coffee from sun dried processing. Quality and quantity of coffee processed would improve in the future as the new processing method gets entrenched in the current system. The quality of green coffee would improve following improvements in post-harvest handling as well as operation of the CPUs. This would translate into higher incomes for the participating cooperative members who would serve as examples to encourage others to get involved in processing using the CPUs.

Improvements in the cooperatives management to assure better access to markets, efficient sales and better treatment of the cooperative members is also necessary. This requires structured capacity building activities for leaders of cooperatives and their members in order to promote better governance. Additionally, proper financial management is another area where capacity building will be necessary. The objective is to promote better access to credit from commercial banks through better governance and financial viability of the cooperatives. There is also need to create awareness among the farming community regarding the benefits associated with the use of the CPUs to process their coffee as compared to home processing using hand pulpers or selling cherries to middlemen. The objective is to improve on the capacity utilisation of the CPUs, reduce the marginal cost associated with producing coffee through the CPUs and hence increase profitability. The importance of improving coffee productivity and quality of cherry should also be emphasized during the sensitisation and awareness creation sessions. This can be achieved through field days, using the mass media and meetings of the cooperatives and other stakeholders in the coffee sector.

### Conflict of Interests

The authors have not declared any conflict of interests.

### REFERENCES

- Abrar S, Ali M, Solomon E (2014). Processing method, variety and roasting duration effect on physical quality attributes of roasted Arabica coffee beans. *Sky J. Agricultural Res.* 3(5): 82-88. Available online <http://www.skyjournals.org/SJAR>.
- Chanakya HN, De Alwis AAP (2004). Environmental Issues and Management in Primary Coffee Processing Process Safety and Environmental Protection, 82(4): 291-300.
- Kazoora C (2011). Costs and benefits of addressing environmental impacts in the wet coffee processing in Rwanda. PEI, Rwanda.
- Ferris S, Muganga A, Matovu R, Kolijn S, Hagenimana V, Karuni E (2001). Marketing opportunities for starch and high quality flour production from cassava and sweet potatoes in Uganda. Resource and crop management monograph No. 29. Uganda: International Institute of Tropical Agriculture. <http://www.foodnet.cgiar.org/Projects/starch%20Monograph.pdf>
- Gonzalo R, Carllose O, Jose A, Juan R, Cesar AR, Maria TD, Jairo RA, Diego AZ, Glori IP, Nelson R (1995). Ecological Coffee Processing at the Farm Level. Cenicafe: Centro Nacional De Investigaciones De Café.
- Gutierrez PH, Dalsted NL (2007). Long term repayment methods. <http://www.ext.colostate.edu/PUBS/FRMING/03757.html>.
- Kuit M, Kidzeru AK, Gwellem A, Abula GJ, Kwanyuy D (2008). Baseline survey on Promotion of Sustainable Arabica Production in North-West Province, Cameroon. Kuit consultancy and Olam Cam.
- Lee WF, Boehlje MD, Nelson AG, Murray WG (1988). Agricultural finance. New Delhi: Kalyani Publishers.
- Murekezi AK (2003). Profitability Analysis and Strategic Planning of Coffee Processing and Marketing In Rwanda: A Case Study of A Coffee Growers' Association. Unpublished M.Sc. thesis, Michigan State University.
- Ostertag C, Wheatly C (1995). A financial model for the implementation and evaluation of small-scale agro-enterprises. In: Gregory J. Scott (ed.) Prices, products, and people: analyzing agricultural markets in developing countries. London: Lynne Rienner Publishers, pp. 361-383.
- Republic of Cameroon (RoC) (2009a). Production of Washed Coffee – Arabica and Robusta. Feasibility Study. Café Africa. Place de la Gare 9, Switzerland.
- Republic of Cameroon (RoC) (2009b). Cameroon Coffee Sector Development Strategy 2010 – 2015.
- Ulf K (2004). Quality Management: Potential and future of ecological wet processing plants in Eastern Africa. Penagos
- Vossen Van Der HAM (2005). A Critical Analysis of the Agronomic and Economic Sustainability of Organic Coffee Production. *Expl. Agric.* 41: 449–473.
- Watkins T, Valley S (2006). An introduction to cost benefit analysis. <http://www2.sjsu.edu/faculty/watkins/cba.htm>.
- World Bank (2010). Cameroon coffee supply chain risk assessment: Draft Report for the All ACP Agricultural Commodities Group.

*Full Length Research Paper*

## External debt and economic growth in the East Africa community

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Using annual data from 1970-2010, this paper employs a panel fixed-effects model to estimate the effect of external debt, as a share of Gross Domestic Product (GDP), on economic growth in East Africa Community (EAC). This study was based on the Solow growth model augmented for debt. The Levin-Lin-Chu test (LLC) approach was used to investigate the properties of the data with respect to unit roots. The Hausman specification test was used to verify the panel fixed-effects model. The findings suggest that external debt has a negative significant effect on per capita GDP growth rate in the EAC. The policy implication is therefore to reduce the external debt burden so as to promote rapid economic growth of the EAC member countries.

**Key words:** External debt, economic growth, East African Community.

### INTRODUCTION

External Public Debt is debt owed to external creditors. Among them are multilateral creditors such as International Development Association (IDA), Africa Development Bank (AfDB), World Bank (WB), International Monetary Fund (IMF) and other International Financial Institutions. Others are bilateral creditors which are essentially other countries; for example Japan, Italy, Germany, as well as commercial creditors essentially private institutions, for example, Standard Bank United Kingdom.

The East African Community (EAC) is among the fastest growing regions. Growth rates have picked up strongly in the EAC countries over the last two decades, outpacing the rest of Sub-Saharan African (SSA) since 2000. During 2005–2010, per capita income growth

reached 3.7 percent a year in the EAC, compared to 3.2 percent for the SSA as a whole, and almost quadruple the rate achieved in the previous 15-year period. Part of the recent high growth is “catching up” after years of very poor growth. In the last part of the 20th century the region suffered periods of severe civil strife and bouts of economic instability. Since then, the region has been committed to strong policies.

However, growth within the EAC has been uneven. Rwanda, Tanzania, and Uganda have had the longest periods of high growth. Uganda’s growth acceleration started earlier than in the other countries and has lasted more than 20 years, with per capita income growth averaging 3.4 percent a year during 1990–2010. Growth in Rwanda and Tanzania has been strong since the early

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2000s. After a period of stagnation, growth is picking up in Kenya-the largest of the five economies-averaging 1.9 percent a year since 2005 compared to minus 0.2 percent in 1990–2004, providing momentum for the region as a whole. Output declined in Burundi in most of the period since 1990 reflecting periods of political conflict but has shown signs of recovery in recent years (McAuliffe et al., 2012).

In Kenya, the early 1980s were characterized by high budget deficits, high inflation, and unsustainable current account deficits. These financial imbalances were triggered by, among other things, the erosion of fiscal discipline following an expansionary fiscal policy implemented after the coffee boom of 1977-78 and severe external shocks (oil shocks) - external debt rose by more than 78 percent between 1974 and 1978 owing to increased import bills (precipitated by the inflation caused by the oil crisis), implications of the break-up of the EAC in 1977 and construction of Kasarani Sports Centre. During this period, the ratio of public expenditures to GDP increased from 24 percent in 1973-74 to over 31 percent in 1979/80 while the deficit increased from 3 to 10 percent of GDP (Kiringai, 2001).

A major external factor in Uganda's debt crisis is the dramatic decline in export receipts due to declining coffee prices and unfavourable terms of trade. The price of coffee (the major export) decreased steadily from 1985 to 1993 and Uganda suffered annual declines in its terms of trade every year from 1986 to 1992. The decline in the terms of trade resulted in a sharp increase in Uganda's debt service to exports ratio, which was over 60 percent between 1988 and 1993. Another major cause of debt was the high level of donor financed development expenditures. The reliance of the adjustment effort adopted in 1987 on external financing has created a larger debt burden for Uganda, with the external debt more than doubling during the adjustment period from US\$1,659 million to \$2.9 billion as of June 1994. Most of this increase was attributable to credits obtained from multilateral institutions to support the balance of payments and finance development projects. Multilateral debt as of June 1994 accounted for about 71 percent of the total debt stock, compared with about 43 percent in 1987 (Mbire and Atingi, 1997).

According to Economic and Social Research Foundation (ESRF) (1998), the debt crisis of the 1980s in Tanzania is explained by both external and domestic factors. These include: temporary high commodity prices and trade booms which led to increased foreign income earnings which, in turn, leveraged borrowing credibility, availability of cheap loans and credits abroad, particularly in the 1970s, expensive expenditure programmes in developing countries and huge expansion of state-owned sector of the economy in the 1970s which did not perform with excellence.

Rwanda's external debt of the central government at the end of 2010 was 14.6 percent of GDP, including a

small fraction which is guaranteed by the central government (0.4 percent of GDP). Multilateral creditors hold more than 80 percent of all central government external debt, with the lion share held by IDA and ADB for a combined 55 percent. Domestic public debt (including central government and the central bank) was 8.9 percent of GDP at the end of 2010, of which nearly half (4.3 percent of GDP) were short-term maturities (IDA and IMF, 2011).

Burundi's Nominal external public and publicly guaranteed debt amounted to 27.4 percent of GDP in 2009. About 90 percent of outstanding nominal external public and publicly guaranteed debt was owed to multilateral creditors, with bilateral creditors accounting for the remainder. The central government debt as a ratio of GDP in the year 2010 was 36.73 percent, with internal and external debts being 5.02 and 31.72 percent of GDP respectively. The government allocates resources made available from debt relief to finance spending in areas critical to meeting Millennium Development Goals (IDA and IMF, 2010).

## LITERATURE ON EXTERNAL DEBT AND GROWTH

### Theoretical literature

The theory holds that both the stock of external debt and its service (the payment of interest and repayment of principal) affect growth by discouraging private investment or altering the composition of public spending. Higher external interest payments can increase a country's budget deficit, thereby reducing public savings if private savings do not increase to offset the difference. This, in turn, may either drive up interest rates or crowd out the credit available for private investment, depressing economic growth. Debt service may discourage growth by squeezing the public resources available for investment in infrastructure and human capital (Clements et al., 2005).

The theory further suggests that external debt may have nonlinear effects on growth, either through capital accumulation or productivity growth. According to the "debt overhang" hypothesis, there is some likelihood that in the future debt will be larger than the country's repayment ability; expected debt-service costs will discourage further domestic and foreign investment. Potential investors will fear that the more there is production, the more they will be "taxed" by creditors to service the external debt, and thus they will be less willing to incur investment costs today for the sake of increased output in the future (Krugman, 1988).

Servén (1997) argues that high debt stocks create uncertainties especially in low-income counties with debt servicing difficulties. In highly uncertain and unstable environments, investors continue to exercise their option of waiting when considering whether to invest in costly



irreversible projects. Due to high uncertain environment, resources are likely to be misallocated and poor quality investments undertaken which slows productivity growth.

**Empirical Literature**

Most of the studies that have looked at the impact of external debt on economic growth in developing economies have been driven by the “debt overhang” hypothesis, a situation where a country’s debt service burden is so huge that a large portion of output accrues to foreign lenders and consequently creates disincentives to invest (Krugman, 1988). Imbs and Ranciere (2009) and Pattillo et al. (2004) used a two-stage least squares and differenced generalized method of moments (GMM) to estimate a standard growth model over the period 1969-98. They find a nonlinear effect of external debt on growth: that is, a negative and significant impact on growth at high debt levels (typically, over 60 percent of GDP), but an insignificant impact at low debt levels. In contrast, Cordella et al. (2005) find evidence of debt overhang for intermediate debt levels, but an insignificant debt-growth relationship at very low and very high levels of debt.

Iyoha (1999) takes a simulation approach to investigate the impact of external debt on economic growth in sub-Saharan African countries using a small macroeconomic model estimated for 1970-1994. The study shows that external debt has adverse effect on investment. The study also pointed out that reduction in debt stock would lead to improvement in investment and economic growth. The author stressed that debt of these countries should be forgiven to stimulate economic growth.

Fosu (1999) employed an export augmented production function to investigate the impact of external debt on economic growth in sub-Saharan Africa for the 1980-1990 period. The study reveals that there is a negative relationship between debt and economic growth. However, the study shows a relatively weak negative impact of debt on investment levels.

Pattillo et al. (2002) using a large panel data set of 93 developing countries over the period 1969-1998 found empirical support for a nonlinear impact of debt on growth: at low levels, debt has positive effects on growth; but above particular thresholds or turning points, additional debt begins to have a negative impact on growth.

The empirical studies have shown mixed results on the impact of external debt on economic growth. Some studies are of the view that external debt impedes the economic growth but some are in the opinion that external debt positively affects the economic growth.

**The Augmented Solow Model**

According to Brauning (2003), following Mankiw et al. in 1992, it is assumed that households fix the saving and

the educational spending ratio. So we have an augmented Solow model. An increase in public debt is used to redistribute every individual’s tax burden from the youths to the middle age that increases the steady growth rate.

We assume a Cobb-Douglas technology with CRS  $Y = AK^\alpha L^\beta$ . Let H be human capital and N be the number of workers. Then  $H/N$  is human capital per worker,  $L = (H/N)N$ . Therefore, a production function is obtained as:

$$Y = AK^\alpha L^\beta$$

Output Y is used for consumption, investment, government purchases and spending on education,

$$Y = C + I + G + E.$$

Considering the public debt dynamics, the government raises loans and levies an income tax in order to finance government purchases and interest payments on public debt. The government spends a fixed share of national income on goods and services  $G = gY$  with the purchase ratio  $g$  constant. In addition, the government borrows a specified portion of national income  $B = bY$  with the deficit ratio  $b$  constant. The budget deficit in turn adds to public debt  $\dot{D} = B$ . Government pays the interest rate  $r$  on public debt  $D$ , so the public interest amounts to  $rD$ . Government imposes a tax at the flat rate  $t$  on both factor income and debt income  $T = t(Y + rD)$ . Thus, government budget constraint can be written as  $B + T = G + rD$ .

Next is the dynamics of physical and human capital accumulation. Disposable income is the sum of factor income and debt income, net of taxes respectively,  $Y_d = Y + rD - T$ . Human capital can be augmented by spending on education,  $\dot{H} = zY_d$ . By backward substitution, one obtains  $\dot{K} = s(Y + rD - T) - B$  and  $\dot{H} = z(Y + rD - T)$ ; with  $B + T = G + rD$ ,  $B = bY$  and  $G = gY$ , which results in:

$$\dot{K} = (1 + b - g)sY - bY \text{ and } \dot{H} = (1 + b - g)zY.$$

The model can be presented by a system of six equations.

$$Y = AK^\alpha H^\beta \tag{2.1}$$

$$Y = \frac{dY}{dt} \tag{2.2}$$

$$\dot{K} = (1 + b - g)sY - bY \tag{2.3}$$

$$\dot{H} = (1 + b - g)zY \tag{2.4}$$

$$\dot{D} = bY \tag{2.5}$$

$$bY + t(Y + rD) = gY + rD \tag{2.6}$$

Here,  $\alpha, \beta, b, g, s, z, D$  and  $K$  are exogenous, where  $r, t, \dot{D}, \dot{H}, \dot{K}$  and  $Y$  are endogenous.

In the steady state, physical and human capital grow at the same rate as output,

$$\dot{K} = \dot{H} = \dot{Y} \quad (2.7)$$

We obtain the steady state growth rate as,

$$\dot{Y} = \dot{K} = \dot{H} = [s(1+b-g)]^2 [s(1+b-g) - b]^\alpha A \quad (2.8)$$

## METHODOLOGY

The basic regression equation that was used to estimate the relationship between debt and economic growth is of the type:

$$Y_{it} = \beta X_{it} + \gamma D_{it} + \mu_i + v_t + \varepsilon_{it} \quad (3.1)$$

Where;

$Y_{it}$  - is the dependent variable (economic growth).

$X_{it}$  - represent the set of explanatory variables.

$D_{it}$  - is the debt variable (external debt).

$\mu_i$  - unobserved country-specific effects.

$v_t$  - unobserved time-specific effects.

$\varepsilon_{it}$  - is the error term.

The subscripts  $i$  and  $t$  represent country and time period respectively.  $Y_{it}$  represents dependent variable, that is the growth rate of GDP per capita.  $X_{it}$  is a different explanatory variable that was used. The variables are the government size, openness, level of investment and terms of trade growth. These variables are known to be consistently associated with growth.

## Data

The data employed in the study consist of a panel of five countries covering the period 1970-2010. The dependent variable is real GDP per capita growth rate (economic growth) ( $RGDPPG$ ), for the debt variable, the indicator which was used is the total external debt-to-GDP ratio ( $ED$ ). Other than the debt variable, different explanatory variables were used to control other factors that influence economic growth; the variables are investment ( $inv$ ), government expenditure ( $gvte$ ), terms of trade ( $tot$ ) and openness ( $opns$ ).

### Variables, measurement and sources of data

**RGDPPG- Real GDP per Capita Growth.** This paper uses Real GDP per capita, which is the annual percentage growth rate of GDP per capita based on constant local currency. Islam (1995) uses per capita values. Data Source: World Development Indicators (WDI) (2011) Data Base.

**INV-Investments.** Investment refers to the purchase of goods that are not consumed today but are used in the future to create wealth. Theoretically, Investment is the key to economic growth; if investment rises in an economy, aggregate demand also rises and therefore economic growth. Jorgenson (2003) obtained that investment in tangible assets is the most important source of economic growth in the Group of Seven (G7) nations. The contribution of capital input exceeds that of productivity for all countries for all periods. This variable is measured as a ratio of GDP. Data source: WDI (2011) Data Base.

**GVTE - Government Expenditure.** Government expenditure refers to general government final consumption expenditure as a share of

GDP. Larger government provides public goods; further increases in government expenditure can increase the disposable incomes of the citizens which encourages growth. However, large government spending can lead to transfer of additional resources away from the most productive sectors of the economy to government, where they are used less efficiently and thus undermining economic growth. Cooray (2009) concluded that expansion of government expenditure contributes positively to economic growth. However, a study by Barro (1991) suggested that large government expenditure has negative impact on economic growth. Data Source: WDI (2011) Data Base.

**TOT - Terms of Trade.** Terms of trade refers to the price of a country's exports ( $P_X$ ) relative to the price of its imports ( $P_M$ ), ( $TOT = P_X / P_M$ ), where  $P_X$  is a price index for all export goods due to the fact that countries export more than one good,  $P_M$  is a price index for all import goods. Mendoza (1997) proposes a stochastic growth model whereby terms of trade uncertainty can adversely affect savings and growth. Data Source: WDI (2011) Data Base.

**OPNS - Openness.** Openness refers to the sum of exports and imports of goods and services as a share of GDP. According to World Bank (1993), significant growth rates are often associated with countries embracing the ongoing globalization and increasing openness to the international exchange of goods and services as well as ideas and technologies. Participation in the international economy was the primary source of growth in many East Asian countries that have experienced fast economic development during the past 50 years. This variable is measured as the ratio of imports (M) plus exports (X) to GDP  $[(M + X) / GDP]$ . Data Source: Penn World Tables (7.1).

**ED-External Debt.** External debt refers to credit owed to foreign lenders. The service of external debt may negatively influence growth by discouraging private investment. Clements et al. (2005) argue that larger debt service can inhibit growth by squeezing public resources available for investment. This variable is expressed as a ratio of GDP. Data Source: WDI (2011) Data Base.

## EMPIRICAL ANALYSIS AND PRESENTATION OF RESULTS

### Panel unit root tests

One of the econometric problems in empirical analysis is non-stationarity of time series data. Spurious regression and inconsistent results are likely to be obtained if we run a regression in the level form while the variables in the model are non-stationary and therefore inferences based on such data are likely to be meaningless. Due to this econometric problem, the variables in the models were tested for panel unit roots using the Levin-Lin-Chu (LLC) method. Levin-Lin-Chu test is based on the following hypotheses:

$H_0$ : Each time series contains a unit root.

$H_1$ : Each time series is stationary.

The results of the panel unit root tests for the variables are summarized and presented in Table 1.

### Cointegration tests

The panel data property of each variable was established

**Table 1.** LLC Tests for stationarity/unit root tests for all variables (variables in levels).

Variable	LLC (Level)	LLC (first difference)	LLC (P-value) Level	Order of Integration
RGDPPG	-3.2612 -2.4582	-	0.0011	I(0)
GVTE	-1.8619 -1.7187	-4.1003 -2.9438	0.1783	I(1)
INV	-1.5662 -1.3780	-4.8588 -3.1609	0.5261	I(1)
OPNS	-1.4523 -1.3151	-5.1897 -3.2571	0.5978	I(1)
TOT	-1.1113 -1.0207	-4.2445 -2.9929	0.8646	I(1)
ED	-1.3853 -1.3642	-1.3845 -1.3629	0.6102	I(1)

**Table 2.** Hausman test results.

	(b) fixed	(B) random	(b-B) Difference	Std. Error
GVTE	-0.2265653	-0.2503636	0.0237983	0.0297179
INV	0.1515269	0.1442853	0.0072416	0.0468227
OPNS	-0.1484637	-0.1279882	-0.0204755	0.0142834
TOT	-0.0302839	-0.0352426	0.0049587	0.0034977
ED	-0.0536946	-0.0587427	0.0050481	0.004525

$$\chi^2 (5) = 14.02; \text{Prob} > \chi^2 = 0.0271.$$

and obtaining their order of integration, the next step was to establish whether the non-stationary variables are cointegrated. Usually, when variables are differenced to attain stationarity, the long-run properties are lost. Cointegration means that there is a long-run relationship between two or more non-stationary variables. Since the dependent variable (RGDPPG) was stationary (I (0)), it was not possible to check for cointegration in that particular case.

### Hausman test

In order to decide whether to use random or fixed effects model, Hausman (1978) proposed a test for such a situation. Therefore, Hausman test is carried out and the null hypothesis is that the preferred model is random effects vs. the alternative fixed effects. It basically tests whether the errors are correlated with the regressors; the null hypothesis is that they are not. Hausman test looks at the difference in the coefficient estimates using fixed effects and random effects estimators. Hausman test was carried out and the results are presented in Table 2.

### Test for cross-sectional dependence

Cross-sectional dependence is the interaction between cross-sectional units. Cross-sectional dependence leads to efficiency loss for least squares and invalidates conventional *t*-tests and *F*-tests which use standard variance-covariance estimators. The study employed the Breush-Pagan Lagrange Multiplier (LM) test of independence. The null hypothesis is that the residuals across entities are not correlated. The test results for cross-sectional dependence are presented in Table 3.

### Heteroscedasticity Test

Heteroscedasticity is a situation where the error terms do not have constant variance. It can be caused by measurement errors and if there are sub-population differences or other interaction effects. Heteroscedasticity does not lead to biased parameter estimates; however, the standard errors are biased if heteroscedasticity is present. This in turn leads to bias in test statistics and confidence intervals.

**Table 3.** Results of economic growth and external debt regression.

Variable	Coefficient	Std. Error	t-Statistic	p-value
CONSTANT	1.4688	3.2897	4.011	0.0001
DED	-0.1416	0.0128	-3.47	0.0061
DGVTE	-0.0542	0.0926	-2.40	0.0175
DINV	0.4174	0.1069	3.90	0.0107
DOPNS	-0.2483	0.0119	-21.06	0.0000
DTOT	-0.0266	0.0108	-2.47	0.0143
Adj. R <sup>2</sup> = 0.4042			Durbin Watson = 2.0697	
F (9, 195) = 4.2638			P-value (F) = 0.000046	
Breusch-Pagan LM test of independence	$\chi^2$ (10) =	11.988	0.2859	
Heteroscedasticity	$\chi^2$ (5) =	520.14	0.0000	
Wooldridge test for Panel Data	F (1, 4) =	0.631	0.4715	

Dependent Variable: RGDPPG; Method: Fixed Effects Regression.

The test results for heteroscedasticity are presented in Table 3.

#### **Test for serial correlation**

Serial correlation occurs when the error terms from different time periods (or cross-section observations) are correlated. According to Drukker (2003), serial correlation in linear panel-data models biases the standard errors and causes the results to be less efficient; therefore, serial correlation should be identified in the idiosyncratic error term in a panel data model. A new test by Wooldridge (2002) is very attractive because it requires relatively few assumptions and is easy to implement.

A test for serial correlation was conducted and the results are presented in Table 3.

#### **External debt and economic growth in the EAC**

Most of EAC's public external debt remains on concessional terms, although its commercial component has increased in the recent past. The EAC's debt portfolio is mainly owed to multilateral creditors, mainly the World Bank's IDA and the African Development Bank followed by bilateral creditors which are essentially other countries for example Japan, Italy, Germany and commercial creditors. For example, in 2001, more than half of Kenya's long-term external debt was owed to the multilateral institutions, the largest amount due to the World Bank's IDA. Bilateral creditors are owed 35% of long-term debt with half of this proportion due to Japan. The external funds in EAC are mainly used to finance education and health expenditures, physical infrastructure and problems of drought and famine (AFRODAD, 2003).

The regression results in Table 3 show a statistically significant negative relationship (at 1 percent level of significance) between the government external debt ratio and the real GDP per-capita growth rate for the five EAC member countries included in the study. The results were as postulated and this means that, on average for the five EAC countries, a unit increase in government external debt leads to a 0.1416 decrease in economic growth, when other independent variables in the model are held constant. This implies that high levels of external debt are associated with low economic growth. The negative link between external debt and economic growth is due to the fact that larger external debt-service repayments can hinder growth by draining the public resources which could be used for development of infrastructure and human capital. Also external debt has strings attached and interest payments on the debt can reduce public savings by widening a country's budget deficit. Further, if interest rates rise, the credit available for private investment is crowded out, thereby depressing economic growth. These results are consistent with the findings of Clements et al. (2005), Pattillo et al. (2004) and Imbs and Ranciere (2009) but contrast the findings by Cordella et al. (2005) who found an insignificant debt-growth relationship at very low and high levels of debt.

The estimated results reveal that a unit expansion of government expenditure leads to a decline in economic growth by 0.0542 units in the EAC region and is statistically significant at 5 percent level. Expansion of government expenditure usually promotes economic growth if the public institutions are credible, but in countries where corruption is rampant like in the EAC, government resources are usually misappropriated and do not lead to meaningful development hence the negative coefficient of government expenditure. For example, according to the global corruption barometer

released by Transparency International in 2013, Kenya was ranked as the fourth most corrupt country in the world while Uganda stands at number 17. According to the East Africa Bribery Index (2010), in Kenya, for example, there are past corruption scandals where the tax payer lost a lot of money, for instance, the Goldenberg scandal in which US \$ 600 million was lost, misappropriation of free primary education funds to the tune of US \$ 1 million and the 2009 maize scandal cost the country about US \$ 26 million. The pattern clearly shows that corruption continues to prevail in critical public sectors of the economy, undermining the standards of living of the citizens thereby derailing development programmes and growth.

The negative effect of government expenditure on economic growth could also be as a result of the fact that in EAC, a greater volume of government spending is non-productive (like the recurrent expenditure in Kenya has surpassed the sustainable level) and the taxation associated with this reduces the rate of economic growth. This conforms to the findings of Barro (1996) who established that a big government is bad for growth. However, Cooray (2009) established that expansion of government expenditure contributes positively to economic growth if there is good governance.

The results confirm that investment drives economic growth of the EAC member countries. This means that an increase in the levels of investments by one unit would promote economic growth by 0.4174 units in the EAC region. Investment is one of the components of aggregate demand. If investment rises in an economy, aggregate demand will rise and therefore economic growth. Since the EAC countries have a lot of spare capacity, a rise in aggregate demand promotes growth. Infrastructural development is generally the engine of growth and especially in the LDCs where productivity is bigger for each unit of capital.

The coefficient of openness is negative and statistically significant at 1 percent level of significance. This implies that a unit increase in trade openness leads to 0.2483 units decrease in EAC countries' economic growth. These countries are net importers and their imports are majorly consumption in nature rather than investment oriented which is not good for growth. Increased imports also mean that consumers have shifted their demand from locally produced goods in favour of imported goods. This has affected local production in EAC especially in agricultural and industrial sectors thereby negatively impacting on economic growth. The results support studies by Adhikary (2011) who obtained a significant but diminishing negative effect of trade openness on economic growth of Bangladesh.

From the results, a unit change in terms of trade leads to a 0.0266 units decline in economic growth in the EAC. These results were as expected (negative relationship) since the region faces adverse terms of trade caused by the nature of the commodities they specialize in. Terms of trade volatility tends to induce volatility in consumer

spending, investment, inflation and economic growth thereby making macroeconomic policies difficult to implement. The EAC countries are developing and usually face sharp swings in export prices which contribute to increased volatility in growth of GDP. Studies by Mendoza (1997) and Broda (2004) have also concluded that changes in terms of trade can account for half of the output volatility in developing countries; furthermore the EAC member countries' exports are small and undiversified specifically the case of Rwanda and Burundi leading to weak growth performance. The EAC member countries like other developing countries are more sensitive to terms of trade volatility than their industrial counter parts that specialize in production of manufactured products. This is the reason why terms of trade are negatively related to economic growth in EAC.

The adjusted coefficient of determination ( $Adj. R^2$ ) is 0.4042, meaning that 40.42 percent of the variations in RGDPPG are explained by the variables included in the model. For this model, the value of Durbin-Watson is 2.0697, close to 2, which reveals no serial correlation. The F value in this model is  $F(9, 195) = 4.2638$ , while the p-value ( $F$ ) = 0.000046. This low p-value implies that all the regression parameters are simultaneously significantly different from zero and that the regression equation is valid in fitting the data.

The cross-sectional test dependence results in Table 3 reveal no cross-sectional dependence of the cross-sectional units since the p-value is greater than 0.05. The p-value of heteroscedasticity results is 0.0000; therefore the null hypothesis for homoscedasticity is rejected. The regression was done in the model by correcting for heteroscedasticity using the option 'robust' in fixed effects. The p-value of autocorrelation results is greater than 0.05, therefore, we accept the null hypothesis and conclude that the data do not have serial correlation.

## CONCLUSION AND POLICY IMPLICATIONS

The main focus of this study was to establish the effect of external debt on the economic growth of the EAC member countries. Regression results of external debt and economic growth revealed that external debt expansion has a negative effect on economic growth of the EAC member countries. If properly utilised, external debt can help the developing countries like EAC to meet their development goals, but this has not been the case.

This study was based on the Debt-Augmented Solow model by Brauninger (2003). According to this model, capital and output grow (or decline) at the same constant rate. Capital and output growths are determined by the saving ratio, the deficit ratio and the government purchase ratio. An increase in the saving ratio leads to a rise in capital growth and output growth. An increase in the deficit ratio or in the government purchase ratio leads to a fall in capital growth and output growth. The reason for the negative effect of the deficit ratio on the growth



rate is that the budget deficit crowds out investment and thereby reduces capital formation. Therefore, the findings of this study conform to the theoretical debt-augmented Solow model.

The major objective of external debt in most developing countries like EAC is to boost economic activities and promote growth. Therefore, leakages in borrowed finances should be sealed. This could be supplemented through increased export earnings by export promotion strategy. Terms of trade can be improved through processing of the EAC exports. Openness should be enhanced for appropriate imports and ensure sustainable position on the balance of payment.

The governments should create a stable political environment in order to boost investors' confidence and increase investment levels and promote economic independence in these countries; this will help reduce the external debt burden.

Heavily indebted countries in the EAC need to adopt debt reduction strategies so that the large stock of external debt which negatively economic growth can be avoided. These countries can also use debt relief strategies such as debt rescheduling; reduced debt servicing, debt restructuring, debt buy backs and negotiate for write offs. Therefore, countries should remain within the internationally accepted debt ratio levels/bands (45 percent of the GDP). The findings further suggest that for each country in EAC, reducing public debt levels would contribute to growth by reducing the "crowding out" effect that debt has on investments.

From the results in Table 1, only the variable real GDP per capita growth rate (RGDPPG) was found to be stationary at 5 percent level of significance and therefore integrated of order zero (I (0)), while the rest of the variables, GVTE, INV, OPNS, TOT and ED are integrated of order one (I (1)). That is, they were found to be stationary after differencing them once.

Test:  $H_0$ : difference in coefficients is not systematic

From the Hausman test results in Table 2, the p-value is 0.0271, less than 0.05. This shows that the value is significant and therefore fixed effects model is applicable in regression. The fixed effects model was therefore chosen for other models based on Hausman tests carried out.

The economic growth-external debt analysis was based on equation 3.1 which was estimated using panel fixed effects corrected for heteroscedasticity. The coefficient of the debt is interpreted by establishing how a unit increase in *ED* would lead to a specific unit change in RGDPPG. Regression of growth-external debt was carried out and results of the model are presented in Table 3.

### Conflict of Interests

The authors have not declared any conflict of interests.

### REFERENCES

- Adhikary BK (2011). FDI, Trade Openness, Capital Formation, and Economic Growth in Bangladesh: A linkage Analysis, *Int. J. Bus. Manage.* 6 (1): 16-28.
- AFRODAD (2003). Africa's External Debt: An Analysis of African Countries External Debt Crisis. Harare, Zimbabwe.
- Barro, R. (1996). Determinants of Economic Growth: A Cross-Country Empirical Study. NBER Working Paper 5698.
- Brauninger M (2003). Public Debt and Endogenous Growth, Physica-Verlag Heidelberg, New York.
- Broda C (2004). Terms of Trade and Exchange Rate Regimes in Developing Countries. *J. Int. Econ.* 63(1): 31-58.
- Clements B, Bhattacharya R, Nguyen T Q (2005). Can Debt Relief Boost Growth in Poor Countries, IMF.
- Cooray A (2009). Government Expenditure, Governance and Economic Growth, *Comparative Econ. Stud.* 51(3): 401-418.
- Cordella TA, Ricci A, Arranz R (2005). Debt Overhang or Debt Irrelevance? Revisiting the Debt-Growth Link," IMF Working Paper No. 05/223 (Washington: IMF).
- Drukker DM (2003). Testing for Serial Correlation in Linear Panel-Data Models, *The Stata J.* 3(2): 168-177.
- ESRF (1998). The Debt Crisis in the LDCs: A Case Study of Tanzania, Policy Dialogue Series No.011.
- Fosu AK (1999). The External Debt Burden and Economic Growth in the 1980s: Evidence from Sub-Saharan Africa. *Canadian J. Dev. Stud.* 20(2): 79-120.
- Hausman JA (1978). Specification Tests in Econometrics, *Econometrica*, 46: 1251-1271.
- IDA and IMF (2011). Joint WB/IMF Debt Sustainability Analysis, IMF.
- IDA and IMF (2010). Joint WB/IMF Debt Sustainability Analysis 2010, IMF.
- Imbs J, Ranciere R (2009). The Overhang Hangover. *J. Dev. Econ.* Forthcoming.
- Islam N (1995). Growth empirics: a panel data approach. *Q. J. Econ.* 110(4):1127-1170.
- Iyoha MA (1999). External debt and economic growth in sub-Saharan African Countries: An econometric study, AERC Research Paper 90, African Economic Research Consortium, Nairobi.
- Jorgenson DW (2003). Information Technology and the G7 Economies, *World Econ.* 4(4): 139-170.
- Kiringai J (2001). Debt and the PRSP Conditionality: The Kenya Case, KIPPRA, Nairobi.
- Krugman P (1988). Financing vs. Forgiving a Debt Overhang, *J. Dev. Econ.* 29(3): 253-268.
- Mbire B, Atingi M (1997). Growth and Foreign Debt: The Ugandan Experience. AERC Research Paper No. 66. African Economic Research Consortium, Nairobi.
- McAuliffe C, Saxena C, Yabara M (2012). The East African Community: Prospects for Sustained Growth, IMF Working Paper, WP/12/272.
- Mendoza E (1997). Terms of Trade Uncertainty and Economic Growth. *J. Dev. Econ.* 54: 323-56.
- Pattillo C, Poirson H, Ricci R (2004). What Are the Channels Through Which External Debt Affects Growth? IMF Working Paper, No. 04/15.
- Pattillo C, Poirson H, Ricci L (2002). "External Debt and Growth," IMF Working Paper 02/69 (Washington: International Monetary Fund), pp. 1-47.
- Servén L (1997). Uncertainty, Instability, and Irreversible Investment: Theory, Evidence and Lessons for Africa, World Bank Policy Research Working Paper No. 1722, pp.1-44.
- Wooldridge JM (2002). *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge, MA.
- World Bank (1993). *The East Asian miracle*. New York: Oxford University Press.
- <http://tikenya.org/index.php/the-east-african-bribery-index>. Accessed on 30/07/13, at 2.00 pm.

*Full Length Research Paper*

# The influence of age and gender on entrepreneurial behaviour characteristics of students and professionals of Business Administration

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The main objective of this study is to identify the elements that show the influence of age and gender on entrepreneurial behavior characteristics observed in both enterprising professionals and students of Business Administration. It was based on a survey with 851 professionals registered by the Regional Board of Directors of Business Administration of Bahia and with 207 students from public and private universities in Salvador, Bahia. Our hypothesis was that the age and gender of the respondents influence their entrepreneurial profile. The results associated with a structural modeling equation indicated that gender did not show a significant relationship with entrepreneurship since the age variable explains the variability of this construct. This study, therefore, may contribute to students' education and the updating of professional entrepreneurs since these findings indicate specific patterns of limitations and biases concerning entrepreneurship.

**Key words:** Age, gender, entrepreneurs, behavioral characteristics, Structural Equation Modeling.

## INTRODUCTION

The use of the term entrepreneurship dates back to the Middle Ages, specifically the thirteenth century, and has as a landmark the commercial activities of Marco Polo. For a long time, this term was used for various purposes. Only in the twentieth century, the meaning of "entrepreneur" started to be associated with the term as it is used today: an individual who is involved in a "process of creating something new and assuming the risks and rewards arising from it" (Hisrich and Peters, 2004, p. 29).

In today's historical context, it highlights the important contribution of Joseph Schumpeter (1982), who argued

that entrepreneurs are "the driving force of economic growth, marketing innovations that make obsolete existing products and technologies" (Barros and Pereira, 2008, p. 977)

In this sense, Schumpeter (1982) has associated innovation with entrepreneurship as well as indicated the important contribution of entrepreneurs in the construction of economic development.

In the same way, based on the economic grounds of Schumpeter (1982), which reinforce this approach, we feel the need to highlight the discussions on the

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behavioral basis defended by Weber (1978).

This author argues that the value system is indispensable for the explanation of entrepreneurial behavior and defines entrepreneurs as "innovative, independent people whose role in business leadership is inferred through a strong formal authority" (Filion, 1999, p. 8).

In Schumpeter's point of view, the entrepreneur is an individual with characteristics such as initiative, authority and foresight (ability to predict) and is not someone who merely knows how to manage the routine of a business; innovation is the driving force of many significant phenomena developed in the entrepreneurship domain that inspire economy.

Schumpeter follows a path in a psychological approach that defines the concept of observable behavior: the individual entrepreneur feels satisfaction by creating, executing things or simply by exercising energy and ingenuity.

For this author, entrepreneurs have a distinct profile of motivation, and believe that economic action would not exist if there were no needs to be fulfilled. The entrepreneur, therefore, is motivated by the desire for power and independence provided by the success of the business and social distinction.

Aiub (2002) considers that the fundamental feature of entrepreneurs is that they provide guidance in the formulation of strategies for action, taking into account that a continuous and deep reflection is needed. Kaldana and Ruzzier (2012) analyzed the entrepreneurial characteristics of students of Business Administration and Economics at a university in Slovenia. Bonura (2011) examined the influence of age on metacognitive perspectives of Business Administration students. From three experiments, the study found that the higher the individual's age, the greater their metacognitive levels are.

In this context, the objective of this study is to examine if age or gender may affect the entrepreneurial characteristics of an individual. We intend to answer the following research problem: Do age and/or gender of students and professionals of Business Administration affect their entrepreneurial characteristics?

This study aims at contributing to the discussions involving personal variables of individuals such as age and gender by analyzing their relationships with the metacognitive level. As long as these relationships are identified with greater emphasis on the examined groups, the evidence from this study will contribute to targeting specific training professionals and students. This paper is structured into five sections. In this section (introduction), we contextualize and problematize the issue and justify the research. The next section presents the theoretical basis with the main studies involving entrepreneurial characteristics. In section 3, the methodological procedures are presented and, in sequence, the data are statistically analyzed in section 4. Finally, in section 5, we have the conclusions of the paper presenting the main

results and contributions of this research.

## LITERATURE REVIEW AND HYPOTHESIS BUILDING

According to Aiub (2002), the discussion on the fundamental characteristics of entrepreneurs should be the foundation for formulating action strategies. Such entrepreneurial characteristics should be highlighted and discussed in depth since they establish a forum to interact and develop practical knowledge, essential for entrepreneurial training.

David McClelland, considered one of the most recognized prominent researchers in this area, conducted a survey in different countries and contexts on the behavioral perspective of the entrepreneur (McClelland, 1987; Venturi, 2003). Among the main results, McClelland (1987) found out that several factors such as the number of previous jobs or started businesses, having family members who already are entrepreneurs and level of schooling are not decisive factors in the business success of a person. In this context, the author indicates social position as a factor that does not establish an individual as an entrepreneur; on the other hand, he found out that his/her personality features and personal skills do have a role to play.

Thus, for the purposes of empirical analysis, this research adopts the theory of David McClelland, since it is one of the most recognized authors in the area. He devoted many years of his academic life to the study of specific EBC, having drawn his conclusions after extensive fieldwork carried out in many countries. Even so, with this approach, we consider the limitations which, perhaps, may occur due to the choice of a single theoretical model.

In studies on the impact of an individual's behavior in developing countries, McClelland (1972) defines entrepreneurs as individuals who have as main characteristic the high need for achievement. In research with young people from different countries, this author identified six critical competences for business success: a) risk acceptance b) instrumental vigorous and/or activity c) individual responsibility, d) knowledge of results of decisions, e) long-term planning and f) organizational skills.

Based on the research carried out by McClelland, the consulting firm Management Systems International (MSI) developed a new survey that obtained as a result the determination of ten entrepreneurial behavioral characteristics of successful professionals. These characteristics were evaluated in a pilot test, applied in the United Kingdom, Malawi and Argentina. After the pilot program, the United Nations Conference on Trade and Development (UNCTAD), through the United Nations Program for Development (UNDP), spread this methodology through agreements with developing countries (GROSSMANN, 2005). The project was named



Project Empretec (UNCTAD, 2008) and was released in 1988, in Argentina (Sebrae, 2009).

McClelland (1972) started from the assumption that human motivation contributes to the economic growth of a nation. According to him, human motivation comprises three dominant needs: the need for achievement, the need for planning and the need for power.

The need for achievement is like the desire for reaching something complex, which demands a standard of success. It is the domain of multiple tasks and overcoming challenges. McClelland does not clearly define the need for achievement but he implicitly leads us to understand it as the necessity that the individual has to do a good job and be recognized for it (Gouveia and Batista, 2007).

Thus, individuals who have the need for achievement have a strong inclination to take responsibility and face calculated risks in the search of success and recognition.

The need for planning is the desire to establish personal relationships, to avoid conflicts and establish strong friendship with trust and mutual understanding. This comes from a social need to develop meaningful relationships with people (Gouveia and Batista, 2007). According to Bowditch and Buono (2002), the need for planning stimulates the individual's actions in carrying out activities in an organization.

Finally, the need for power as defined by McClelland (1972, p. 211) is "a concern with the control of the means to influence a person". This need reveals the desire to influence or control, to be responsible and have subordinates. Strong-willed people generally seek power positions of leadership as well as are interested in acquiring and maintaining prestigious positions and reputation (Gouveia and Batista, 2007).

Bowditch and Buono (2002) consider that, on the needs of planning and power, some people are motivated by social needs, while others by the need to achieve goals and gain status and authority over others.

McClelland (1978) states that every human being has a predominant profile of need, be it achievement, planning or power and that, to a greater or lesser extent, it influences their activities. Individuals with higher need for achievement are more likely to develop analytical skills, which is essential for business success.

In the context of the needs for achievement, five Entrepreneurial Behavior Characteristics (EBC) were categorized. The first feature is the search of opportunities and initiative. This feature highlights the need of an entrepreneur to do things before being asked or before being compelled by an unforeseen business. The second characteristic is the calculated risk inclination. In this feature, the entrepreneur can analyze options and evaluate risks in a decisively way. His action is focused on risk reduction and control of the results.

The third feature is the persistence. One key behavior of an entrepreneur is the ability to act in the context of significant limitations and be persistent with the changing

strategies of his acting in order to face challenges and difficulties.

The fourth characteristic is the need of quality and efficiency. It is the ability of an individual to act in order to perform activities that meet or exceed standards of excellence, using procedures to ensure that this activity is completed on time or that it meets the quality standards provided.

The fifth characteristic is the entrepreneurial commitment. The entrepreneur feels responsible for the performance of the organization and the achievement of goals and objectives.

Within the scope of planning needs, there are three EBC. The sixth characteristic is defined as the search for information. Among the behaviors analyzed by McClelland and expressed by entrepreneurs, one can find the personal inclination to get information about suppliers, customers and competitors or research into how to produce a product or provide a service. The seventh feature is goal setting. This feature argues that the entrepreneur has the ability to establish goals and objectives that are challenging for his/her business.

The eighth characteristic is defined as systematic planning and monitoring. This feature supports the ability of the entrepreneur to plan their activities dividing them into large tasks and subtasks with deadlines, to revise his/her plans, taking into account the results and changes in circumstances.

The ninth entrepreneurial characteristic is persuasion and contact networks. According to this feature, the entrepreneur employs deliberate tactics to persuade or influence others to achieve their own goals. The tenth and last feature is independence and self-confidence. An entrepreneur continually seeks autonomy in relation to standards and controls. This feature supports the ability of the entrepreneur to maintain his/her point of view even in adverse situations or before disappointing results.

A work based on the methodology of McClelland, using one of the hypotheses of this study, was presented at the World Conference Proceedings of the International Council for Small Business (ICSB). This research examined the difference in EBC between male and female entrepreneurs in India. The sample comprised 50 men and 50 women from the cities of Mumbai, Delhi, Kolkata, Chennai, Hyderabad, Ahmedabad, Lucknow and Bangalore, and various business sectors, including hardware, software, pharmaceutical, electronics, mechanical products, electrical and herbaria (Sharma and Laroia, 2008).

The survey showed characteristics associated with gender. Characteristics unrelated to gender are: high need for achievement, independence, effective leadership and capacity of information processing. Specifically on female entrepreneurs, one can highlight four behavioral characteristics: they have a higher level of search of opportunities and initiative, risk aversion, they are creative and persistent (1st, 2nd lower, 3rd and 4th

EBC, respectively). In men, on the other hand, three behavioral characteristics stand out: high levels of confidence; they can evaluate the risk for profit and persuasion (10th, 2nd and 9th EBC, respectively).

Assessing the needs of each gender, women fit more on the needs for achievement, while men in power needs (Sharma and Laroiya, 2008). The main contribution of this research is to provide an analysis of each gender, which enables not only the market but also the academia and teachers to better understand abilities, making adequate allocation of activities possible.

From this discussion and theoretical dialogue, this study suggests two methodological hypotheses to be empirically investigated. The first hypothesis, designated H1, states the greater the age of the respondent, the smaller his/her EBC level will be

A survey conducted among producers of ginger in the state of Nagaland, India, aimed to study the behavioral characteristics of these enterprising individuals. The rationale for this research argues that in the years 2006 and 2007 the region has achieved a world record in the production of ginger. The researchers had the intention to investigate the relationship between this record and the entrepreneurial skills and see which other behavioral issues could be related. Among the results, age was identified as a variable that has significant influence on the entrepreneurial characteristics investigated (JHA, 2010). In another survey, also conducted in India, in the region of Varanasi, 70 entrepreneurs of small scale industries were analyzed. The results showed that younger adults (under 30 years old) had higher EBC compared to more mature people (RAI, 2008).

Reimers-Hild (2005) examined the relationship of behavioral characteristics of entrepreneurial success such as persistence, age and risk inclination of 863 university students from the Midwest, in the United States. The results showed that there is no significant relationship between EBC and the success of a business or the persistence of an entrepreneur. However, the variables risk inclination and age of the subject presented differences statistically distinct.

The second hypothesis - H2 - argues that there are significant differences in the level of EBC established between men and women. Tominc and Rebernik (2006), through a survey of 100 entrepreneurs from Slovenia, claim that there are significant differences between male and female entrepreneurs. The results indicated that women are more motivated and analytical. They are, however, very unsafe, while men were more aggressive and skillful, but very skewed in decision making; in other words, they have a greater inclination to take shortcuts in their judgments and, unlike women, they usually resort to statements, calculations, reports, projections or other type of document that can support their decision.

The discussion of gender differences and their relationship with entrepreneurial behavior is important to identify the personality traits that distinguish each gender.

Collins (2007), in his doctoral thesis examined gender differences in entrepreneurial practices. His study involved 110 respondents in two cities in the Midwest of the United States, employing the Entrepreneurial Quotient Scores (EQS). The study results showed that, in all range of EQS, genders were statistically different: men scored higher on measures of adaptability, risk tolerance and time management, while women scored higher on measures of planning, guidance, intuition and perception. Some other relevant research evidence is that constructed "success in entrepreneurship" was perceived in different ways by male and female entrepreneurs. While women said that success is synonymous with recognition and passion for business, men understand that it is linked to financial rewards and solving challenges.

## METHODS

### Choice of method

Regarding the type of study, this research is based on a survey, which can be described as the acquisition of data or information on attributes, actions or judgments of a particular group of people, appointed as representative of a target population, by means of an instrument, usually a questionnaire (Pinsonneault and Kraemer, 1993). As basic characteristics of this method of research one can include: (a) the objective of producing quantitative definitions of a population, and (b) making use of a pre-defined instrument.

Thus, to test the relationship between variables, as well as to test the model chosen, we adopted the Structural Equation Model (Structural Equation Modeling - SEM). This methodological instrument was chosen, having in mind that, according to Hair et al. (2005), the structural equation modeling provides a direct method to simultaneously handle multiple dependency relationships with statistical efficiency. The SEM allows for the operation of relationships between variables in a profound fashion, conducting exploratory and confirmatory analyses. Also, it allows for the representation of unobservable concepts in these relationships.

### Research participants

The collected sample was determined by the criterion of accessibility and adopts the suggestion of Hair et al. (2005), which, as a general rule, suggest that the database of a survey must contain at least five times more observations than the number of variables that make up the number of data. Since the instrument for collecting data has fifteen questions, for this research it was necessary to collect a sample of at least 150 respondents.

The study of the possible relationship between entrepreneurial behavior characteristics and age and gender was performed by analyzing a sample comprising students and professionals of Business Administration from Salvador (BA). The population was composed of: (a) students in public and private universities and (b) professionals registered by CRA-BA, a body of Directors which governs the profession in the state of Bahia, Brazil (in Portuguese, Conselho Regional de Administração da Bahia).

Data collection was performed through the application of an electronic questionnaire, using Google Docs, provided by CRA-BA and the coordination of courses of universities involved in the research (three public and six private universities). The sample consisted of 1058 respondents, with 851 professionals and 207 students.

**Table 1.** Characteristics of entrepreneurs.

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1	I am confident that I can be successful in any activity that I propose to run
2	I consider carefully the advantages and disadvantages of different alternatives before performing a task
3	When something comes between what I'm trying to do, I persist in my task
4	I try to take into account all the problems that can be presented and I anticipate what to do if they succeed.
5	When I am performing something hard and challenging, I have confidence in my success.
6	The results of the work that I do are always excellent.
7	To obtain my goals, I have different ways to overcome obstacles that may arise.
8	If a certain method to face a problem fails, I turn to another one.

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Source: Lima Filho (2013).

### Pre-test application of the data collection instrument

We conducted a pre-test for instrument validation and initial observation of the data obtained. According to Raymundo (2009), content validity is a dynamic trial of an instrument by different examiners in order to assess whether the instrument actually covers different aspects of its object.

The research base for the realization of the pre-tests consisted of a sample that reached at least 10% of the total sample required for the study (150 respondents). Therefore, we selected fifteen individual entrepreneurs in the city of Senhor do Bonfim/Ba. We adopted this city, considering that the use of respondents in Salvador/Ba at this stage could prevent the participation of respondents willing to contribute to the final study.

The pretest was divided into two stages. In the first stage, respondents answered the questionnaire individually. Then, shortly after finishing filling out the questionnaire, respondents participated in a focused group session in which they expressed their perceptions and feelings about the stimulus used in the survey and their opinions on the questionnaire used. After due consideration, the questionnaire was adjusted to the final implementation.

The presentation above intended to authenticate and sustain the use of assumptions in this research. In order to test the hypotheses, we used the instrument of entrepreneurial characteristics developed by McClelland (1971, 1972), updated by Raven (2001) and validated by Lima Filho (2013). This is presented in Table 1.

### Review for data treatment

Considering the hypotheses of this study, the data processing was carried out in three phases: in the first, the data were analyzed descriptively to characterize the respondents in the sample and examine the distribution of the data; in the second, we tested the nomological validity of variables involved in this analysis, the last step to build validation; and, in the third, we used a "t" test for the equality of independent samples.

Firstly, to test the proposed relationships between constructs, we used the technique of Structural Equation Modeling with Partial Least Square method (SEM-PLS), a method of modeling, considered to be soft, that allows the simultaneous examination of a series of dependency relationships especially when latent variables influence (exogenous) in a relationship and are influenced (endogenous) in subsequent relationships (Fávero et al., 2009; Hair et al., 2005).

Then we have determined the sample size required for processing the SEM-PLS that, according to Chin (1998) is: five respondents for each statement or 5 to 10 times the number of relationships that influence the construct with the largest number of relationships. In this study, the data collection instrument has 8 outputs; therefore, the sample size needed to perform the data

processing was of 80 respondents.

Finally, for possible differences between EBC and gender, respondents were tested, considering the scores of this construct generated in processing SEM-PLS.

The theoretical model of this study sought to describe factors related to EBC. For this purpose, we used the survey instrument previously mentioned (Table 1), composed of eight (8) questions, whose answers, a priori, were expected to be explained by five factors:(a) Entrepreneurial Behavioral Characteristic Achievement (EBC R);(b) Entrepreneurial Behavioral Characteristic Planning (EBC P);(c) Entrepreneurial Behavioral Characteristic Power (EBC O);(d) Age (IDAD) and, finally,(e) Gender (GENE) of the respondent.

It is postulated that the initial model is presented with the following factors:

- a) EBC R Factor - measured by questions 3 and 7;
- b) Factor EBC P - measured by questions 2, 4 and 8;
- c) The EBC Factor - measured by questions 1, 5 and 6;
- d) Factor AGE - one question that the respondent indicates his age in years;
- e) Factor GENE - one question that the respondent indicates his/her gender (variable - 0 - male and 1 - female).

### ANALYSIS OF RESULTS

The descriptive analysis of the collected data processed by the use of the Statistical Package for Social Sciences (SPSS) revealed that the sample consisted of 1058 respondents, of whom 55.7% (589) were males and 44.3% (469) females with an average age of 35.9 years and a standard deviation of 11.24 years. Of these respondents, 80.4% (851) are professionals and 19.6% (207), students.

SEM requires verification of the assumption of multivariate normality to be tested by multivariate kurtosis index PK Mardia processed with the software LISREL. According to Garson (1998) and Hattie (1997), values less than 3.0 for this statistic indicate that the assumption of multivariate normality is not violated.

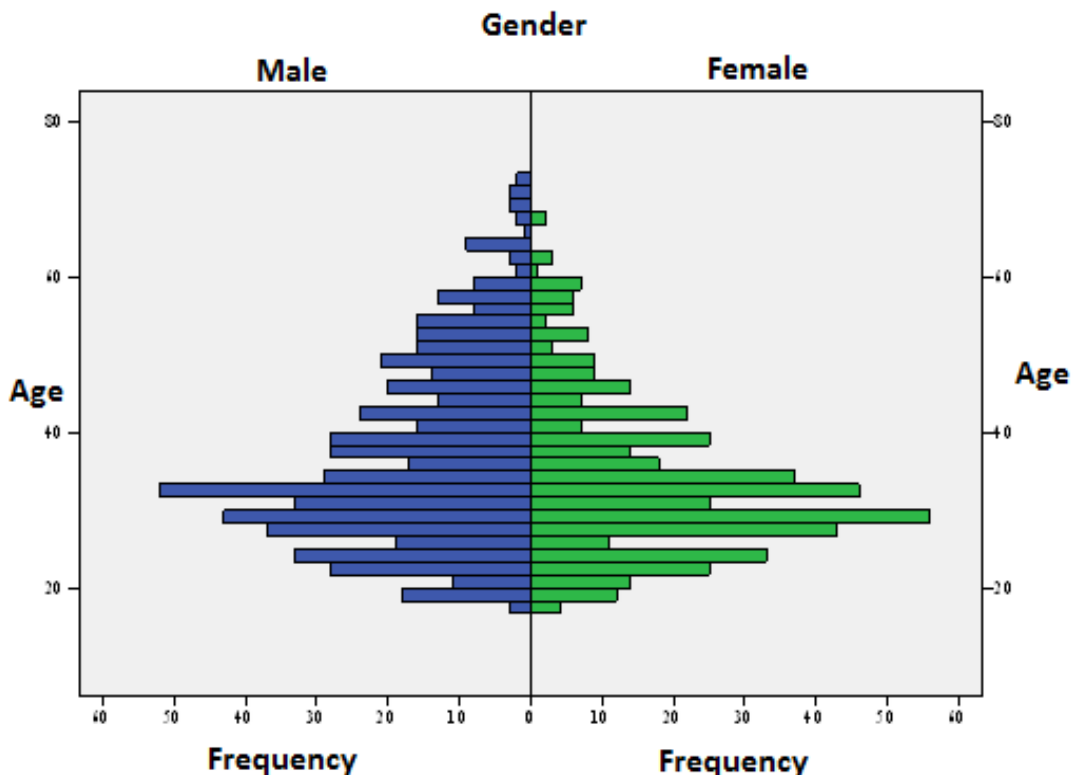
The test of multivariate normality of the data resulted in statistical multivariate kurtosis PK Normalized Mardia (PK = 105.37, sig = 0.000). As expected, the distribution does not present multivariate normality since the data collected are derived from ordinal scales (as a research tool).

Regarding the age distribution of respondents, 65.1%

**Table 2.** Composition of the sample by age.

	Frequency	Proportion
Aged between 18 and 28 years	291	27.5
Aged between 29 and 38 years	398	37.6
Aged between 39 and 48 years	199	18.8
Aged between 49 and 58 years	124	11.7
Aged from 59 years	46	4.3

Source: designed by the author, 2014.



**Figure 1.** Distribution of age by gender. Source: designed by the author, 2014.

of respondents were aged less than 38 (Table 2). The youngest respondents in this research were 18 years old (7 individuals) and the eldest were 72 years old (2 subjects). The test of multivariate normality of the data resulted in statistical multivariate kurtosis PK Normalized Mardia (PK = 81.01, sig = 0.000), so the distribution does not present multivariate normality.

When considered by gender, the average age of women (average = 34.14, standard deviation = 0.458) is lower than that of men (average = 37.41, standard deviation = 0.494) and frequency distributions are asymmetrically positive for both genders, as shown in the histogram in Figure 1.

The processing of the full model - involving the dependency relationships between the constructs proposed in the study and among observable indicators and

dimensions of these constructs with multivariate statistical SEM-PLS technique of bootstrapping a sample of 1058 respondents and 500 repetitions – resulted in statistics "t" of students in Figure 2.

As seen in Figure 2, the Student "t" statistics generated in bootstrapping for load measurement model and structural model have values above the critical limit of 1.96. These results show that all loads differ significantly from zero at a significance level of 5%, which combined with the magnitude of the loads obtained, demonstrate the convergent validity of the measurement model.

In Table 3 are organized correlation measures, averages and standard deviations of the non-standardized scores, the roots of the Average of Variance Extracted (AVE) and composite reliability of the constructs and dimensions of the research.

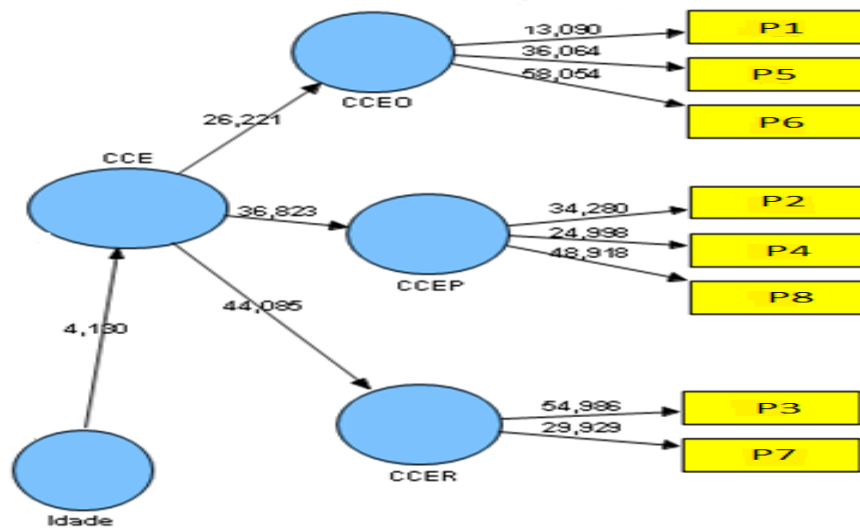


Figure 2. Model Bootstrapping with SEM-PLS complete. Source: designed by the author, 2014.

Table 3. Correlation matrix between the dimensions and constructs of the research.

Panel A - Measurements of the latent variables of 1st order			
	EBC O	EBC P	EBC R
EBC O	0,69048		
EBC P	0,227942	0,74283	
EBC R	0,401838	0,449581	0,79172
C.C.	0,780287	0,786464	0,770064
Average	3,946743	4,257587	4,064559
SD	0,651343	0,629933	0,677396

Panel B - Measurements of latent variables 2nd order		
	EBC	Age
EBC	0,7556454	
Age	0,194336	1
C. C	0,792158	1
Average	4,09455288	35,96125
SD	0,48834237	11,23632

Source: designed by the author, 2014.

The data in Table 3 show that all measures of Composite Reliability (CR) are above the level of 0.70. Thus, the full model also meets internal consistency and reliability for predicting the proposed relationships. There are still latent variables that both first order dimensions and second order constructs have, showing roots of strokes higher than the correlations between them. Therefore, the full model also meets discriminant validity.

With the intention of classifying entrepreneurial behavioral characteristics in participants surveyed, the results

are presented in Tables 4 (by gender) and 5 (for age).

The results in Table 4 indicate that men have a higher average regarding EBC, while women have higher averages in EBC Planning and Realization. This empirical evidence corroborates the findings of Sharma and Laroiya (2008) and Collins (2007), who also found in men a greater inclination to EBC Power and that women are more fitting in EBC Realization.

Based on the results in Table 5, one may notice that all Entrepreneurial Behavior Characteristics (Power, Planning

**Table 4.** EBC by genre.

		Male	Female
EBC O	Average	3,9167	3,8828
	Standard deviation	0,5654	0,7110
EBC P	Average	4,2404	4,2549
	Standard deviation	0,6552	0,5875
EBC R	Average	4,0340	4,0605
	Standard deviation	0,6760	0,6746

Source: designed by the author, 2014.

**Table 5.** EBC by ag111e.

		18-28 yrs	29-38 yrs	39- 48 yrs	49- 58 yrs	From 59 yrs
EBC O	Average	3,7734	3,9306	3,9369	4,0041	4,0389
	Standard Deviation	0,7342	0,6063	0,6044	0,4969	0,5111
EBC P	Average	4,1326	4,2348	4,2475	4,4607	4,4963
	Standard Deviation	0,6270	0,6692	0,6091	0,4587	0,4852
EBC R	Average	3,8945	4,0492	4,1111	4,1829	4,3222
	Standard Deviation	0,7108	0,6459	0,6817	0,6014	0,6670

Source: designed by the author, 2014.

and Implementation) are stimulated by the increasing age of the respondents; the higher the age of respondents, the higher the averages of the EBC. One can also see that the standard deviations tend to decrease with increasing age; in other words, a lower dispersion around the average is presented in more mature respondents.

The proposed hypothesis H1 was the higher the age of respondents, the lower their EBC level. With this purpose, the following hypotheses were formulated, null and alternative, respectively:

H1<sub>0</sub>: There is no relationship between age and EBC;

H1<sub>1</sub>: There is a relationship between age and EBC.

We observed that age significantly influences Entrepreneurial Behavior Characteristics - EBC ( $\beta_1 = 0.101$ ,  $t = 4.130$ ,  $\text{sig} = 0.000$ ); however, the explanation of the variability of this construct by age was low and equal to 1.02%.

Despite the low explanatory power through the analysis of these data, it could be inferred that the variable age had a significant effect on the responses (EBC), since the  $p$  value was less than the significance level (0.000); therefore the null hypothesis (H10) was rejected.

This result is aligned with studies performed by Devolder (1988), Bradley (1991), Lamb (1998), Cavallini and Pagnin (2002), ReimersHild (2005), Rai (2008), Jha

(2010) and Bonura (2011). The hypothesis 1 showed results in the opposite direction hypothesized. Therefore, the first hypothesis of this study is empirically demonstrated as follows: "the higher the age of the respondent, the greater his/her level of entrepreneurial behavioral characteristics".

Hypothesis H2 was formulated to examine whether the gender of the respondent can influence their EBC level. With this purpose, the following hypotheses were formulated:

H2<sub>0</sub>: There is no relationship between gender and EBC;

H2<sub>1</sub>: There is a relationship between gender and EBC.

In order to test these hypotheses, we carried out a test of independent samples, as shown in Table 6.

Before the test for equality of means, we performed a preliminary examination of the scores generated in the processing of SEM-PLS, according to gender and their entrepreneurial characteristics. The distribution of these scores according to the average and standard deviations are shown in Table 6.

The figures indicate that males present levels of Entrepreneurial Behavior Characteristics higher than women; however, it is necessary to verify whether these differences are significant at the 5% level. The analysis of the normal score "EBC" presented measures equal to

**Table 6.** Gender scores.

		Gender	
		Male	Female
EBC	Average	0,0244	-0,0306
	Standard Deviation	0,0388	0,0494

Source: designed by the author, 2014.

**Table 7.** Average test for independent samples.

95% confidence interval of difference							
Gender	t	df	Sig. (bi-caudal)	Average	Standard deviation	Superior	Inferior
EBC (Male)	0,527	1050	0,599	0,03136	0,05955	-0,08548	0,14821

Source: designed by the author, 2014.

Kolmogorov-Smirnov (KS = 1.316, sig = 0.063) allowing to accept it as normal distribution.

The processing results of the test for equality of means "t" of Students - for independent samples with the scores "EBC" according to gender - are summarized in Table 7.

As can be seen in Table 7, the average differences for EBC according to gender were not significant (EBC = 0.03136; sig = 0.599). Therefore, at the 5% level of significance, there are no relevant differences between EBC and gender of the respondent. Thus, the second hypothesis was not supported by research data (H20 is accepted).

## Conclusion

This study presented a research problem whose purpose was to explain the relationship between age and gender of entrepreneurs and Business Administration students and the behavioral characteristics of these individuals. This study also sought to examine the elements that could demonstrate this relationship.

Giving attention to the research problem, the proposed overall goal and the methodology conducted in this study, empirical tests conducted confirmed the hypothesis of the effect of age of respondents on EBC. However, the possibility of influence of gender on EBC was not supported. Therefore, one could observe that age is only one factor that had a positive impact on entrepreneurial characteristics, at least in the context covered by this research.

These results, therefore, may contribute to the education of students and updating professional entrepreneurs, since these findings indicate specific paths of the limitations and biases concerning entrepreneurial profiles. By presenting how age and gender can influence entrepreneurial characteristics, the study not only remarks that professional and technical aspects are linked to entrepreneurial activity, but also aspects involving perso-

nal characteristics. With these findings, we believe that teaching strategies and continuing education for entrepreneurial students and professionals can take into account different perspectives in order to adapt to each profile involved.

We hope that this research has contributed to the knowledge of the research fields of entrepreneurship, especially for lines of research devoted to studying entrepreneurship under the bias of the psychological school.

We can point out some important limitations of this study, which can be seen as opportunities for future research. The survey sample was restricted to the city of Salvador, Bahia, and students and professionals of directors. Future studies could apply the instrument employed in other regional contexts to analyze the behavior of the constructs in the context of their research and corroborate or refute our findings.

## Conflict of Interests

The authors have not declared any conflict of interests.

## REFERENCES

- AIUB GW (2002). Inteligência empreendedora: uma proposta para a capacitação de multiplicadores da cultura empreendedora. 106 f. Dissertação (Mestrado em Engenharia de Produção) – Universidade Federal de Santa Catarina, Florianópolis.
- Barros A, Pereira CMM de A. (2008). Empreendedorismo e crescimento econômico: uma análise empírica. *Revista de Administração Contemporânea*, Curitiba, 12(4): 975-993, Out./Dez.
- Bonura BM (2011). Age Differences in Remembering "What" and "Where": A Comparison of Spatial Working Memory and Metacognition in Older and Younger Adults. *Dissertação de Mestrado (Mestrado em Psicologia)*, Universidade de Tufts.
- Bowditch JL, Buono AF (2002). *Elementos de comportamento organizacional*. São Paulo: Pioneira.
- Bradley KP (1991). A comparison of three adult age groups with regard to metacognition, traditional and practical problem-solving ability and the need for cognition. *Tese de Doutorado (Doutorado em Educação)*, Universidade da Geórgia, 276 f.

- Cavallini E, Pagnin A, Vecchi T (2002). The rehabilitation of memory in old age: effects of mnemonics and metacognition in strategic training. *Clinical Gerontologist*, 26(1/2).
- Chin WW (1998). The partial least squares approach for structural equation modeling. In George A. Marcoulides (Ed.), *Modern Methods for Business Research*, Lawrence Erlbaum Associates.
- Collins TY (2007). Gender differences in entrepreneurship: A study of entrepreneurship in two Midwestern counties. Tese (Doutorado em Psicologia), Universidade de Capella. p. 147 .
- Devolder PA (1988). Adult Age Differences In Metacognition: Monitoring and Motivational Beliefs. Tese de Doutorado, Universidade de Western Ontario.
- Fávero IP, Belfiore P, Silva FI, Chan BL (2009). Análise de Dados: Modelagem Multivariada para Tomada de Decisões. Rio de Janeiro: Elsevier.
- Filion LJ (1999). Diferenças entre sistemas gerenciais de empreendedores e operadores de pequenos negócios. *Revista de Administração de Empresas – RAE*, São Paulo, 39(4): 6-20, out./dez.
- Garson GD (1998). Testing of Assumptions. In Statnotes. Available online at <<http://www2.chass.ncsu.edu/garson/pa765/assumpt.htm>>. Acesso em: 10 jun 2014.
- Gouveia C, Baptista M (2012). Teorias sobre a motivação: teorias de conteúdo. Coimbra, Portugal: Instituto Politécnico de Coimbra, 2007. (Trabalho não publicado). Disponível em: <23TTP://prof.santana-e-silva.pt/gestao\_de\_empresas/trabalhos\_06\_07.pdf>. Acesso em: 10 abr.
- Grossmann M (2012). The Impact Challenge: conducting impact assessments for the Empretec Programme. University of Oxford and UNCTAD. United Kingdom, 2005. Disponível em: <<http://users.ox.ac.uk/~lina0771/Documents/Impact%20Assessment%20Background%20Paper.pdf>>. Acesso em: 15 abr.
- Hair JF, Anderson RE, Tatham RL, Black WC (2005). *Multivariate Data Analysis*. 5. Ed. New Jersey: Prentice Hall.
- Hattie J (1997). *Common Problems in Structural Modeling*. Auckland: School of Education, University of Auckland - New Zealand.
- Hisrich RD, Peters MP (2004). *Empreendedorismo*. 5. 23 T. Porto Alegre: Bookman.
- JJha KK (2010). Entrepreneurship Characteristics of Ginger Cultivators in Nagaland. *Environment and Ecology*, 28(3): 1586-1588.
- Kaldana L, Ruzzier M (2012). Risk propensity as entrepreneurial characteristic: the case of Slovenian students of business and economics studies. *Int. J. Manage. Educ.* 6(4): 363-381.
- Lamb JC (1998). Cross-age, paired, interactive tutoring: Personal agency, literate behaviors, and metacognition of Hmong-American fifth graders. Tese de Doutorado, Universidade de Colorado at Boulder, 349 f.
- Lima Filho, RN (2013). *Empreendendo sobre o Empreender e Pensando sobre o Pensar: Um estudo sobre Características Empreendedoras e Metacognição*. Tese (Doutorado em Administração). 114 f. Universidade Federal da Bahia, Salvador.
- McClelland D (1971). n-Achievement and entrepreneurship: a longitudinal study. *J. Pers. Soc. Psychol.* 1 4):392-396.
- McClelland D (1972). *Sociedade Competitiva*. Rio de Janeiro: Expressão e Cultura.
- McClelland D (1978). Managing motivation to expand human freedom. *Am. Psychol.* 33(1): 201-210.
- McClelland D (1987). Characteristics of successful entrepreneurs. *J. Creative Behav.* 21(3): 219-233.
- Pinsonneault A, Kraemer KL (1993). "Survey Research Methodology in Management Information Systems: An Assessment," *J. Manage. Inf. Syst.* (10:2):75-105.
- Rai SK (2008). Indian Entrepreneurs: An Empirical Investigation Of Entrepreneur's Age And Firm Entry, Type Of Ownership And Risk Behavior. *J. Serv. Res.* 8(1): 213-228.
- Raven J (2001). *Competence in the Learning Society*. New York: Peter Lang.
- Raymundo VP (2009). Construção e validação de instrumentos: um desafio para a psicolinguística. *Letras de Hoje*, 44(3): 251-271.
- Reimers-Hild CI (2005). Locus of control, need for achievement and risk taking propensity: A framework for the "entrepreneurial" learner of the 21<sup>st</sup> century. Tese (Doutorado em Ciências Humanas), 287 p., Universidade de Nebraskas.
- Schumpeter JA (1982). *Teoria do desenvolvimento econômico: uma investigação sobre lucros, capital, crédito, juro e o ciclo econômico*. São Paulo: Abril Cultural.
- Sebrae (2012). Empretec: para conquistar o mundo dos negócios. Disponível em: < 23 TTP://www.sebraemg.com.br/geral/visualizadorConteudo877>. Acesso em: 25 jan.
- Sharma DD, Laroiya SC (2008). A Comparative Analysis of Characteristics and Challenges of Male and Female Entrepreneurs in India. *World Conference Proceedings of International Council for Small Business*, Disponível em <<http://search.proquest.com/docview/192410184/fulltext/136953A556452184457/7?accountid=14643>>. Acesso em 08 maio de 2012.
- Tominc P, Rebernik M (2006). Growth Aspirations Of Slovenian Entrepreneurs – A Gender Differences Perspective. *J. Contemp. Manage. Issues*, 11(1): 37-52.
- Venturi JL (2003). Estudo das características empreendedoras dos proprietários de restaurantes da cidade de Itapema, conforme abordagem de David McClelland. 113 f. Dissertação (Mestrado em Turismo e Hotelaria). Universidade Vale do Itajaí, Balneário Camboriú.
- Weber M (1978). *Basic Concepts in sociology*. London: Peter Owen.



*Full Length Research Paper*

## Relationship analysis of B2B channels: A case study on channel relationships in Brazilian agribusiness companies

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**This paper examines through a case study the relationships of an agricultural input supplier company with its distribution channels in Brazil. In this paper concepts are presented related to the subject distribution channels and the dimensions of behaviour in relationship marketing. We present four models attempting to evaluate the stage of relationship marketing that two companies can have. The focus of this paper is to analyse the relationships between a supplier of agricultural inputs and its distribution channels that participate in relationships programmes with distributors offered by manufacturers. With this analysis, it was possible to verify whether the quality of the existing relationship is similar to the desired one regarding the relationships programme and whether it really achieves its goals.**

**Key words:** B2B relationships, marketing channels, distribution programmes, agricultural inputs.

### INTRODUCTION

Studies on B2B relationships (business-to-business) often discuss theories of Transaction Cost Economics and Agency Theory (Coronado et al., 2010; Pérez, 2010). Relationship marketing has been portrayed as a polar condition, where transactional and relational exchanges are seen as opposite ends of a spectrum (Hingley, 2005). Researches on trade relationships are concentrated in two main parts, which are often even contradictory: the

neoclassical and the behavioural economic. The neoclassical economic is focused on aspects of exchange such as profit margins, prices and market share. On the other hand, the behavioural involves non-economic elements such as trust, satisfaction and commitment (Gyau et al., 2011). Examples can be found in exchange being conceptualized in terms of relationships rather than transactions (Vargo and Lusch,

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2011).

Despite having several studies on behavioural relationships between organisations in literature such as Morgan and Hunt (1994), Mcneil and Wilson (1997), Payan (2007), Gyau and Spiller (2009), no research papers were found simultaneously addressing equal number of behavioural constructs as this work. Furthermore, little attention has been paid to the channel behaviour, or the behaviour of the members (Zhuang and Zhou, 2004). And the reason of studying the Brazilian market and companies is due to the fact that 'researches in supply chain management and channel partnerships in emerging economies remain a lacuna in general' (Luo et al., 2009, p. 1114).

On a practical level, it is observed that 68% of the Brazilian agricultural inputs are concentrated in great players such as Bayer, Monsanto, Syngenta, Dupont, Basf and Dow (Theisen, 2010). In monetary terms, the Brazilian market of agricultural pesticides had US\$ 7.3 billion in sales (Globo Rural, 2011), with growth of 15% in 2010, according to The National Union of Industries for Agricultural Defensive Products (SINDAG, acronym from Portuguese) in 2010. The national market of seeds summed around US\$ 2 billion, placing Brazil as the world's fourth largest market in seeds (Mnagro, 2011).

In this context of growth, concentration and competition in input markets – represented here by seeds and pesticides – the management of marketing channels is fundamental to create competitive advantage. According to Stern et al. (1996) and Rosenbloom (2002, 2008), the competitive advantage created in the marketing channels is difficult to be copied by other competitors, unlike other marketing variables such as price, promotion and product. "Successful inter-organizational relationship management in distribution channels is a critical source of competitive advantage in many industries and markets' (Sezen and Yilmaz, 2007, p. 41).

Based on this, then, the research problem proposed in this paper consists of: How is the relationship programme between industry and resale assessed from the factors commitment, communication, trust and cooperation, behaviour monitoring, service quality, conflict resolution and use of legitimate power, and satisfaction?

As a consequence to the research problem, the general goal of this article is to analyse the strategy of relationships with the channel in agribusiness companies addressing behavioural aspects. The specific objectives are: to identify how the agribusiness company relates to its distribution channel; to analyse relationships strategies with the distribution channel; to verify the benefits involved; to analyse the results of the strategy adopted by the company.

The following describes the structure proposed in this paper. In section 2 will be discussed concepts and importance of marketing channel and relationships between business partners. Then, in section 3 will be

discussed the methodological issues. In section 4 will be analysed the results of the interviews in the light of the variables of relationships in marketing channel of agricultural inputs. Finally, in section 5, conclusions and managerial implications of this work will be presented.

## THEORETICAL FRAMEWORK

### Concepts of marketing channel and industrial marketing channel components

In an economy marked by the industrial and transactional paradigm the concept of marketing channel was connected to the distribution of products. With the increase of complexity of the systems the concept evolved for the planning, organisation, coordination and control of efforts of the members in the channel. The perspective was to make the function of the members in the channel as efficient as possible (Anderson and Coughlan, 2002).

Nowadays, the perspective of marketing channel is related to the institutional theory with the view that the channel must be consumer-oriented. This paradigm shift is linked to the environmental complexity (economic, technological, etc.), the increase level of competition, global business school and change in customer behaviour (El-Ansary, 2005).

According to Gundlach et al. (2006), in the field of institutional theory three great dimensions to the study of marketing channels emerged – channel structure, governance and relationship management. They also state that it is necessary to recognise that interdependence creates common interests. These three dimensions reflect how companies establish and exert influence on one another in order to increase efficiency and compete in better conditions with other marketing channels.

Since the main question of this study is the relationships in marketing channel of agricultural inputs, it is a necessary complement in the approach of the members of the channels.

The industrial market can be understood as the market for goods and services produced or sold by agricultural, commercial, industrial companies or institutional organisations for their use in production, sale or rental of other goods or services (Hutt, 2002; Siqueira, 2005). 'The network approach sees industrial marketing as interaction in a network of relationships' (Sanzo et al., 2003, p. 329). The agricultural market, target of this study, can be classified as an industrial market due to characteristics of the participants.

According to Churchill and Peter (2005), resellers in a distribution channel are also called intermediaries. Siqueira (2005) classifies intermediaries in the industrial marketing channel as industrial distributors, sales force and sales agents. Here is a more detailed definition of each intermediary according to the author:

### **Industrial distributors**

a) Industrial wholesaler: may vary depending on the extent of rendered services. Industrial wholesaler can perform normal functions of a wholesaler; perform limited services, where some functions are eliminated, or special service of selective brand merchandising, item, preparation, maintenance and storage shelves.

b) Industrial distributor: varies between exclusive distributors who buy for the stock and have exclusive sales in a certain territory, or non-exclusive, buying from several manufacturers.

c) Reseller: buys for the stock, has exclusive sales territory, gives technical assistance services and provides assistance to guaranteees and several other functions.

2. *Sales force*: manufacturers, producers or resellers may have their own staff to sell directly to industrial consumers. According to Siqueira (2005) in these cases are established regional sales offices.

3. *Sales agents*: intermediaries who do not buy to have a stock. They can be natural people, exclusively or not, and sales representative company, exclusively or not. Sales agents have a flexible and efficient industrial distribution, with low capital immobilisation and lower expenses, being a substitute for the manufacturer's sales force. The advantage of this intermediary is the fact that it operates with commissions, the agent is artificial or natural person who knows and is well accepted by the customers, besides gathering the requests of small manufacturers, performing complete range of products. Finally, it is emphasised that this type of intermediary allows rapid entry into new markets through the hiring of new agents.

Since a channel can have multiple agents with different interests, it is necessary to address the behavioural question linked to the inter-organisational relationships.

Table 1 summarizes the results of several studies built in the last few years regarding relationships within the marketing channel.

The papers presented explore the use of various marketing channels and the challenges that companies encounter when trying to manage them in their business. What is certain is that the constant conflicts in the marketing channel that occur between suppliers and buyers are, in part, due to the changes caused by the expansion of supply channels and the balance of power between channel members. These changes indicate the organizations that the form of relationship between channel members also needs to be adjustable to this new reality. Therefore, there is need for proper coordination by the company so that this relationship occurs in a satisfactory manner to all members involved.

### **Marketing channel relationships**

Joint activities with shared goals are called strategic

alliances, which may be created formally or informally. In a strategic alliance, two or more organisations have connexions (legal, economic or interpersonal) that make it work according to the perception of a single interest shared by all parties (Coughlan, 2002). Neves (2006) defines alliances as forms of organisations which entail the mutual exchange of property rights, technology, employees, information, goods and services, while the firms remain independent. They keep their own identity, culture and structure. However, freedom of either party may be limited.

Relationship marketing can be considered as a set of activities aiming to develop and maintain successful relationships with customers (Morgan and Hunt, 1994). 'Relationship marketing refers to establishing, developing, and maintaining successful relational exchanges' (Frazier, 1999, p. 231). 'Relationship marketing implies to go beyond the traditional approach focused on discrete and punctual transactions to a viewpoint which considers that these transactions take part of a long-term communication and relationship process between the firm and customers or other publics' (Sanzo et al., 2003, p. 329).

Hutt (2002) argues that managing relationships become a priority on the company agenda because loyal customers are more profitable than those who seek price, and the creation of competitive advantage due to the creation of successful relationships is a difficult strategy to be copied. 'In today's competitive environment, service firms are quickly discovering that far greater profits are yielded from harvesting existing accounts than from cultivating new customers' (Doney et al., 2007, p. 1096)

Every marketing relationship is a process in which exchanges occur, that is, value is received and sent. These changes evolve from a simple transactional exchange to a collaborative exchange (Day, 2000). Transitional exchange is focused on negotiations of standardised products and with competitive prices, while in the collaborative exchange is emphasised the search for joint solutions and an expectation of commitment and long-term benefits (Hutt, 2002). Relationship marketing focuses on value creation through collaborative and continuous exchanges. However, transitional marketing focuses on zero-sum relationships, in which one party attempts to stand out from the other in close relationships (Cannon and Sheth, 2000).

Hutt (2002) claims that different types of relationships between suppliers and customers are obtained according to market conditions and characteristics of purchase. Suppliers need to understand that while some customers seek collaborative relationships, others need relationships that are more distant.

Rosenbloom (2002) presents three categories of programmes addressed to offer support to the members of the channel, which can be divided in cooperation, partnership or strategic alliances and distribution

**Table 1.** Variables of the study.

Authors	Contribution to the field of knowledge
Sharma and Mehrotra (2006)	Since the second half in the 1980s, many companies began to offer multiple channels of marketing to other companies. This wide availability provided several positive points, but brought two negative effects. First, the strategy made the process expensive, raising business costs. Later, the increasing availability of multiple channels ended up letting customers confused at the time of decision-making. From these observations, the authors provide a structure that allows the company to develop its optimal channel mix.
Rosenbloom (2007)	The author explains that the marketing strategy based on multi-channel gained momentum in the business-to-business distribution channels, especially with the emergence of online channels (through internet). Choosing products and services within this wide range of possibilities of different channels provides increased levels of choice among customers. However, the task of coordinating and integrating these multiple channels proved to be challenging. The challenges range from inserting the role of e-commerce in multichannel structure, finding an optimal channel mix to creating synergies between the channels. According to the author, it is necessary to do so, choosing a leadership prepared to build multiple integrated channels concerning itself in establishing strategic alliances, creating sustainable competitive advantages and managing complex supply chains that can handle conflicts.
Wilson and Daniel (2007)	The maturation of e-commerce, the spread of call centers in the B2B space and the requirement for better prices and services from buyers have promoted a quick change in the market in many B2B sectors, with new combinations of channels being offered to customers in search of advantages. Managers can no longer rely on the resources of the channel that gave them competitive positions in the past. Instead, you need to be able to combine them differently, gaining additional resources and having superfluous resources, and do this repeatedly and rapidly if you wish to continue competing in the market. The term "dynamic capabilities" emerged in the strategic management literature for these activities. The authors have used four case studies and analytic induction to analyze the data. Seven dynamic capabilities to channel changing were identified.
Claro and Claro (2010)	The research on the relationship between buyer and supplier has emphasized the importance of collaboration in business networks. The authors have sought to study the effects of information on the collaborative relationship between buyers and suppliers. Downstream information refers to information that a company gets from marketing channels, when formed by wholesalers, distributors or retailers. This approach enables companies to focus their efforts on the most relevant sources of information and not the entire network. Information was collected from a Dutch flower company to test the hypothesis. It was found that collaboration and relationships between channel members are due to information downstream from the point of view of the buyer (wholesalers) and from the perspective of suppliers (producers).
Hsieh et al. (2014)	The authors develop a model that analyzes the buyers option between two different categories of channels (purchases made directly from the industry or retail) in order to answer three questions: (1) how does the competition of products and channels affect the pricing decision and coordination of the channel, (2) how do the customer preferences in the channel affect pricing decisions and the coordination of the channel and (3) what are the individual and combined effects of products and replacement of the channel and how do they affect the coordination of the channel. Five observations were described: (1) the more suppliers enter the supply chain or adopt dual channels, the more prices and profits fall and the competition becomes more intense, (2) retail prices for direct sales and profits over the chain converge as the number of suppliers increases, (3) the more primary changes are in demand by retail channel, the higher will be the retail prices and the lower will be the sales prices, (4) greater degrees of competition on canal amplify differences in profits, implying that coordination in the channel should be more intense so that conflicts in the channel are minimized and (5) the difference in prices for purchases made directly at retail are minimal the greater the number of customers whereas the difference increases as the number of retail customers buying directly decreases. This pattern also applies for the industry.

Source: Elaborated by the authors.

programme:

*a. Cooperative arrangements:* Cooperative programmes exist to obtain extra support of the members of the channel in promoting their products in exchange for

incentives. These are the most common ways of motivation in conventional and slightly aligned channels. *b. Partnership or strategic alliance:* reinforces a continuous relationship and mutual support between the manufacturer and the members of the channel. In these

partnerships, the concept of 'we versus them' is replaced by a new concept of cooperative nodes. The expectations of commitment must be detailed and the roles must be well defined.

*c. Distribution programmes:* this approach deals with all aspects of relationships in the channel. It is a comprehensive set of policies to promote a product through the channel. The essence of this approach is the development of a professionally planned and managed channel. The manufacturer and the members of the channel should make every effort to incorporate the needs of both parties. When successfully implemented, the programme must offer all the advantages of a vertically integrated channel, but with the status of independent companies.

### Some behavioural constructs

One of the general research areas of marketing channels relates to the behavioural dimensions of the channel, addressing the question of how channel members perceive, build, and deal with inter-firm relationships that exist within the channel (Zhuang and Zhou, 2004).

In the literature review, it was identified the main inherent concepts in the channel relationships that are shown below.

As the first factor, it was identified the exercise of power in the channel, to which Frazier (1999) is defined as the capacity to influence the behaviour of another member in the channel, defining power as a potential for influence [...] is clear superior to the pressure or coercion definition. High joint power serves as the underlying foundation of strong channel relationships, including strong relational norms and high levels of interfirm commitment' (p. 228).

The relationship marketing literature sometimes implies that power negates cooperation and trust (Kumar, 2005), but power is not solely a negative force (Hingley, 2005). All organisations are motivated primarily by self-interest and strive to secure surplus value for themselves. However, weaker organisations in business-to-business exchange relationships do tolerate imbalance of mutuality and reward (Hingley, 2005). There are six types of power bases, including reward power, coercive power, legitimate power, referent power, expert power, and information power (Zhuang and Zhou, 2004).

For Doney et al. (2007, p. 1099):

*Trust in a partner's credibility is based on the belief that one's partner stands by its word, fulfils promised role obligations and is sincere. Trust in a partner's benevolence is a belief that one's partner is interested in the firm's welfare and will not take unexpected actions that would have a negative impact on the firm.*

Naudé and Buttle (2000, p. 353) say that 'trust brings a

feeling of security, reduces uncertainty and creates a supportive environment'. This trust has the ability to make the exercise of power more equal. To complement, Stanko et al. (2007, p. 1096) state:

*Commitment has been operationalised in several ways, including desire to continue the relationship, willingness to make short-term sacrifices, confidence in the stability of the relationship, and investments in the relationship [...] the effort and intention of the buyer to continue the relationship in the future.*

Another factor that has recognition of its importance in the channel is the communication factor. According to Su et al. (2008, p. 266):

*Communication among firms involves understanding of common goals and conflict resolution. Inefficient communication may cause conflicting behaviours because of mutual misunderstanding and dissatisfaction. On the contrary, timely and frequent communication can resolve disputes and rectify perceptions of cooperative behaviours.*

This factor is related to another called satisfaction, and according to Sanzo et al. (2003, p.338): 'Communication reduces the appearance of tension and disagreements in the relationships with suppliers or facilitates a solution. This contributes to increase satisfaction' (Sanzo et al., 2003, p. 338).

According to the authors, satisfaction is understood as a construct of vital importance in relationships. They claim that: '[...] Then, the satisfaction appears as a key variable in order to obtain the loyalty of the different publics of the firm-customer firms (buying roles), suppliers, distributors or others' (p. 329)

Finally, the factor control of the members in the channel can be accomplished in various ways such as through use of boundary personnel, the electronic transfer of orders and other information, mail surveys to end customers, customer feedback in web sites, and outbound telemarketing efforts. A benefit of building strong channel partnerships may be that explicit monitoring and its associated costs are not needed so much (Frazier, 1999).

A summary of the main authors of the factors and definitions are in Table 2.

### METHODOLOGY

For this study we used qualitative research; according to Richardson (1999), it is characterised as a non-structured and exploratory research methodology based on small samples that provide insights and better understanding of the context of the problem. This choice of method aims to comprehend the phenomenon in depth and get the impression of all the stakeholders involved.

**Table 2.** A summary of the main authors of the factors and definitions.

Author	Variable	Definition
Rauyruen et al. (2004); Eggert (2004); Ivens and Prado (2007); Caceres and Paparoidamis (2007); Deimel et al. (2008).	Commitment	Intention of a partner to remain in a long-term business relationship; stability in the relationship. Uncommitted partners tend to keep their relationships due to contracts, relationships of power and monopoly. Committed partners act proactively to improve relationships, have a greater tolerance to conflicts and contribute to stability in the relationship.
Morgan (1994); Rauyruen et al. (2004); Ulaga (2004); Ivens and Prado (2007); Payan, (2007); Reynolds et al. (2009).	Communication, trust and cooperation	Communication involves the sharing of information, either formally or informally, of relevant and opportune aspects. A good level of communication increases the confidence in the trading partner. Confidence is gained over time with repeated positive interactions among market participants. The trust in the relationship increases customer loyalty. In addition, buyers need to feel safe with suppliers and ensure the confidentiality of the negotiation. Cooperation refers to joint work between the participants of the channel to achieve common goals. This cooperation does not mean absence of conflict.
Ivens and Prado (2007).	Behaviour monitoring	Control or supervision of the relations before and after the negotiations.
Rauyruen et al. (2004); Papassapa et al. (2005); Caceres and Paparoidamis (2007); Wilson et al. (2011).	Service quality	Fundamental measure of performance of a company, studies show a positive correlation between perceived quality and customer loyalty.
Morgan (1994); Ivens (2007); Gyau (2009); Jensen (2009); Bobot (2011); Samaha et al. (2011);	Conflict resolution and use of legitimate power	When constructive, conflicts contribute to the growth and strengthening of the partnership. Regarding the use of legitimate power, it is expected that it will not be used to secure the interest of a party.
Rauyruen et al. (2004); Ulaga (2004); Ivens and Prado (2007).	Satisfaction	Satisfaction is a combined measure of economic satisfaction of the client and also with social, mental and emotional relationship aspects (end customer or B2B). It is a key variable in customer retention, with power to influence the recommendation for other customers.

Source: Elaborated by the authors.

The method considered most appropriate was the case study method in order to verify how the strategy of relationships occurs in the channel of the selected case. For Yin (2005), Case Study is the strategy chosen to examine contemporary events when it is not possible to manipulate relevant behaviours.

The case studied was about a North American multinational company, operating more than 50 years in Brazil and leader in several markets of agricultural inputs, notably pesticides and seeds. This company develops a programme of relationships with distributors. The company allowed interviews with managers of distribution and sales, also providing contact of distributors. The relationship programme with resellers was thought at the beginning of the last decade and implemented in 2007, based on the statement that the seed market gained in complexity and profitability and market of pesticides had become a commodity in Brazil. Several companies began to compete strongly in the market and after a while had developed very similar products. The difference between them was the level of services provided by the industry and resale, and the performance of the retail sales force.

In this scenario it was created the need to differentiate and enhance their top resellers, providing training opportunities, with courses taught by specialised consultants, and also a market differentiation, which consisted of higher margins, bonuses depending on sales targets, and priority in launching new products and communication efforts. On the other hand, it was requested greater strategic alignment by the retailer regarding pricing policy, exclusive sales, commercial dedication, information sharing and punctuality in payments.

According to the financial volume and strategic alignment of the retailer, he was classified into different categories, with different policies and relationships.

The programme includes the participation of 350 resellers throughout Brazil and is managed by marketing within the company. With this programme the rotation of the resellers decreased by 75% compared to the average before this implementation.

Courses were held in several cities in Brazil such as Ribeirão Preto in Sao Paulo, Cuiabá in Mato Grosso, Londrina in Parana, and Passo Fundo in Rio Grande do Sul.

To collect data we used the sources: primary, data resulting from in-depth interviews and secondary sources consisting of company documents. In addition to these sources, we added the authors' observation. This allowed a triangulation of the data (Jack and Raturi, 2006).

Secondary data were obtained from information provided by the company, referring to latest results presented to the company's sales team, investments, goals for the future, goals achieved, sales volume and some points on the channel strategy adopted by the company.

The interviews were conducted in person with the national distribution manager and national sales manager of the company studied and three distributors. The responses were transcribed electronically. Some respondents were contacted again by telephone to clarify some doubts.

The distribution manager, who is responsible for managing the programme of relationships with distributors throughout Brazil, has been working on this position for two years, and previously worked

as regional sales manager. The current challenge for the position is to implement, coordinate and evaluate the results obtained with the distribution programmes, since huge investments are made and consequently the results are charged.

The regional sales manager acts in the southern region of Minas Gerais and part of São Paulo state, being responsible for eight technical representatives of sales of the company that reach the market through its distributors. Due to the characteristics of the market, direct selling is not common in this region. There are approximately 78 distributors, of which 23 are among the participants of the relationship programme developed by the company.

The interviews with the managers of the company were possible due to a meeting scheduled by the company on the second week of November 2010. The subject had been previously discussed with the respondents by phone and e-mail. On the day of the interview, each respondent had 40 min to answer the script of the interviews, and subsequent contacts were made by telephone to clarify doubts relating to the answers and a deeper understanding of the subject.

We interviewed three distributors, here denominated distributor A, distributor B and distributor C. The interviews were conducted on the second week of November, with an average duration of thirty minutes. The distributor A acting in the region of Alfenas – Minas Gerais, has been working on this position for 15 years and has approximately 30 employees, divided into two branches. The person responsible for answering the research holds the position of commercial manager, responsible for managing sales of seeds.

In the region of São João da Boa Vista – São Paulo there is the distributor B, who has 5 stores and 78 employees. The co-owner contributed to the interview. This distributor, who is classified in the highest category in the programme developed by the company, has exclusive sales in the region and can still act as an external agent. The distributor C has a store with 15 employees, operating in the region of Passos-Minas Gerais, and the respondent was the partner of the establishment.

In the interview with distributors was difficult to contact and keep their interest in answering the survey. The main reason was lack of time to respond with greater depth.

This paper conducted a comparison between the opinions of distributors with the intentions of the supplier company in relation to the distribution programme offered. To identify these opinions we used an interview, previously described. This interview covered ten variables selected by the researcher, with reference to the literature and in the opinion of a group of executives linked to the company and the channel. Based on this structure of the research, the results were evaluated by checking the degree of alignment of the perceptions of respondents.

For each variable there was a response, which might be composed of a primary data, and whenever possible supplemented by a secondary data.

A cross-checking analysis of data to verify the responses was done, identifying the convergences and possible divergences between the responses found (in this case some texts were eliminated from the survey).

The responses of the representatives of the company were compared to those of the distributors. When necessary we used more than one piece to exemplify either the opinion of the company or the opinion of the distributors.

## ANALYSIS OF THE RESULTS

In this section, the analysis of results from interviews with three distributors of the company will be conducted. The answers collected from distributors were organized

according to six selected and discussed variables in theoretical framework: commitment, communication, trust and cooperation, behavior monitoring, quality of service, conflict resolution and use of legitimate power and satisfaction. These variables were chosen because they are relevant in explaining behaviors among companies in the marketing channel.

Table 3 presents the main results obtained from the interviews of managers and distributors in each of the research variables.

On the first variable, the commitment to maintaining the business relationship is seen as important by distributors and with little likelihood for changing the supplier. In the opinion of managers, changes in relationships are common, although the commitment is strengthened when companies help their distributors, thereby increasing the opportunity cost of the changes.

Such statements of respondents agree with the ideas of Morgan and Hunt (1994), Ulaga and Eggert (2006), and Cáceres and Paparoidamis (2007) and Deimel et al. (2008). The first authors state that the possibility of a drop in the ratio by one of the parts is reduced to the extent that this increases the degree of involvement in the relationship. The quality of relationships is mentioned by Ulaga and Eggert (2006) as a factor that increases the commitment of the relationship, decreasing the chances of abandonment by the parties. Cáceres and Paparoidamis (2007) and Deimel et al. (2008) state that the reliability of the partner and the continuity of the relationship and orientation of the long-term partner are crucial for successful business relationship aspects.

Even working with distribution programs, the company sometimes fails to maintain an attractive value proposition to keep the distributor loyal to the relationship (Ravald and Grönroos, 1996).

The commitment is also considered an important factor for Papassapa et al. (2005) in building successful relationship marketing. A high level of commitment between the parties helps stabilize the relationship and create major barriers to switching suppliers (Ulaga and Eggert, 2006).

Regarding communication, trust and cooperation, distributors considered themselves satisfied with the existing channel of communication; they see trust as stable to the extent that each channel member performs his activities and does not believe that opportunistic behavior between participants is successful. For managers, clear rules and credibility in the relationship were indicated as major factors for the progress of the business. The expansion of relationship programs was also emphasized, highlighting communication, transparency and involvement of distributors.

Morgan and Hunt (1994) argue that the existence of a clear and objective communication between trading partners helps to align expectations and conflict resolutions, confirming the opinions given by distributors and

**Table 3.** Summary of results obtained in the research.

Variables	Synthesis of opinions
Commitment	Distributors: 1, They see difficulties in changing the supplier; 2, They consider important to meet targets to avoid being penalized; Managers: 1, They say that changes in both sides are common; 2, They say that the commitment is strengthened when the company help distributors achieve their goals and to promote products.
Communication, trust and cooperation	Distributors: 1, They testify that the communication channel meets their needs; 2, They ensure that the trust is maintained when we everyone does their part. 3, They believe that there is room for opportunistic behavior; Managers: 1, They enlarged their relationship programs, focusing on communication and transparency and greater involvement of distributors; 2, They believe that the environment of credibility and clear rules are critical to the success of the program.
Monitoring the behavior	Distributors: 1, They highlight the importance of monitoring the company and other distributors regarding business practices, pricing policies and direct sales.
Quality of service	Distributors: 1, They do not perceive personalized service when requesting services from the supplier; Managers: 2, They say that the program has improved the company/distributors relationship, being relevant to include distributors as part of the process.
Conflict resolution and use of legitimate power	Distributors: 1, They emphasize the importance of flexibility for unexpected events; 2, They believe that partnerships should be long term, with shares free of threats between distributors. Managers: 3, They defend the establishment of clear rules to resolve conflicts and relationship guided dialogue to prevent clashes.
Satisfaction	Distributors: 1, They point out relationship improvements within the company and the need for other variables besides financial metric to strengthen relationships in the marketing channel.

Source: Prepared by the authors.

managers.

The answers given by the managers also cooperate with the ideas of Mohr et al. (1999). The authors state that the benefits from the effect of communication increases as the degree of power in the relationship decreases, since the focus is the involvement of the management of distributors, communication and transparency.

On the third variable, behavior monitoring, distributors assume the importance of monitoring the company and other distributors regarding business practices, pricing policies and direct sales. Such behavior has the defense of Teixeira et al. (2004), in stating that monitoring the actions of channel members prevents lack of mutual cooperation.

Within the service quality, the distributors do not realize a personalized service when requesting services from the

supplier. In the view of managers, the program showed improvements in the company/distributor relationship. These are seen as part of the process. The arguments reported by distributors challenge the perceived quality of services, explained by Papassapa et al. (2005), by placing as an important point to evaluate the performance of suppliers. The collected reports also contradict the idea of Cáceres and Paparoidamis (2007), where the quality of service can also be focused by them in consumer satisfaction in relation to service, not only to evaluate the service itself as a process. However, Papassapa et al. (2005) and Cáceres and Paparoidamis (2007) have confirmed their ideas with the responses of managers for this variable.

As for the conflict resolution and the use of legitimate power, distributors defend long-term partnerships without threats to each other, and flexible in the face of



unexpected events. In addition, managers support the resolution of conflicts with clear rules and their prevention through dialogue in the relationship. Such arguments are supported by Ivens and Pardo (2007) who state flexible application of rules as a differentiating factor to resolve conflicts. The expectation that no group will assert its legitimate power to resolve a conflict and that both parties must have a positive attitude in accepting the norms and rules of the relationship will lead to increased levels of commitments between the parties (Ivens and Pardo, 2007; Morgan and Hunt, 1994). Moreover, a conflict that was solved in a friendly manner brings more maturity to the relationship and it is considered part of the business (Hunt, 1994; Bobot, 2011).

In "satisfaction", the last variable presented, distributors suggest improvements in the relationship with the company and the need for other variables, in addition to financial metrics, to strengthen their satisfaction in the relationship.

Those reported needs are seen in studies of McNeil and Wilson (1997), as the authors suggest other factors that impact the satisfaction of the members involved in the relationship between wholesale and retail: service delivery, quality of service rendered by employees in transactions, the absence of previous conflicts regarding the relationship and the freedom that retailers should have to replace their suppliers during times of high prices. That is, economic and behavioral factors have impacts on the level of satisfaction of the parties involved.

Comparing the testimonies collected by the results of relevant studies in the literature, it was found that the results described by Sharma and Mehrotra (2006) run counter to the answers given by the respondents in this study by mentioning that the communication channel meets the needs of distributors, especially when each one develops their part accurately. The negative effects brought about by expansion of marketing channels, as pointed out by the authors, usually happen when there are no clear rules and when channel members do not fulfill their roles in the relationship.

However, the testimony of distributors and managers reveals similarities to the results approached by Rosenbloom (2007), showing the importance of building multiple integrated channels, focusing on establishing strategic alliances, creating sustainable competitive advantages and which can handle conflicts. Such integration in multi-channel was an issue raised in the responses of distributors and managers.

Wilson and Daniel (2007) observed a change in the form of conducting business within the marketing channel. With the expansion of channels, managers have lost the power they held before, forcing them to adhere to a new way of dealing with the resources of the channel based on participative management. This observation goes in line with the results seen in this study, where flexibility in the face of unexpected events, dialogue,

setting clear rules and a long-term partnership in the relationship have become the primary method of prevention and resolution of conflicts between parties involved.

The respondents claim that the program has improved the company/distributors relationship, being important to insert distributors as part of the process. These improvements are a result of collaboration in business networks between buyers and suppliers, as noted by Claro and Claro (2010) to observe the effects of information within the channel.

On the other hand, Hsieh et al. (2014) analyze the different effects that happen when buyers choose to buy directly from the industry, bypassing the distributor, and when they do, using the distributor in the process. These behaviors affect the trust between channel members. Distributors discourse on this issue highlighting the importance of monitoring the company and other distributors regarding business practices, policies and prices to direct sales, indicating that the effects on prices vary according to the companies and distributors change in the way they purchase.

## CONCLUSION AND MANAGERIAL IMPLICATIONS

In this section, specific objectives of the work are answered, managerial comments are made and the limitations of the research are highlighted.

The specific objectives proposed are:

1. To identify how the company relates with its distribution channel;
2. To analyse strategies of relationships with the distribution channel;
3. To verify the benefits involved;
4. To analyse the results of the strategy adopted by the company.

The company relates with its distribution channel primarily through its sales force. The importance of distributors to access the market is widely recognised within the company, and to raise the level of relationship with its most strategic channels the company uses the tools available in the distribution programme.

Using these tools, the company seeks to bring stability to the relationship between those involved, increasing the level of commitment and cooperation among participants of the channel. The reputation of suppliers can be defined as the belief among participants that the supplier is honest and has concern for its customers (Doney and Cannon, 1997). The distribution programme increases the credibility of the supplier with its distribution channel, making the reseller recognises the effort and rewards it with positive attitudes in the business relationships.

The company aims to stimulate cooperation among

members of the channel praising the actions taken as a whole, presenting the results achieved, for instance, the increase in business volume or gain of market share.

An effective communication channel was established mainly through technical representatives of sales. The service structure still consists of a service team headquartered in regional offices. Nowadays, technology of information is a great ally to an effective communication channel (Ballou, 2006; Ameseder et al., 2008), the information available on the Internet, as well as a well-informed and prepared team to satisfy the demands of distributors is essential to improve the quality of the relationship. Miscommunication in intra-channel may be the primary cause of many problems, as well as adopting appropriate communication strategies can solve many common problems (Mohr and Nevin, 1990).

The distribution programme developed by the company is based on three factors: training, differentiation and payment. With this strategy, the company aims to increase the commitment of distributors and offer benefits to motivate this behaviour.

The company offers a differential in relationships with the distributor, and as a compensation factor it expects certain behaviour by participating distributors. The relationship programme foresees that benefits will be granted through certain predetermined conditions and behaviours of distributors are expected. These behaviours are monitored and serve as part of the evaluation of programme results, in which quantitative results are also taken into consideration since sales goals are set and monitored throughout the year.

The distribution programme creates a favourable environment to distribution channels. The company has the credibility recognised by the distributor. The maintenance of the rules of the programmes for several years, combined with a good communication strategy, is fundamental factor for keeping the environment in the relationships.

Within this context, the distributor agrees to have its behaviour monitored, because with the rules clear and well-defined functions, the company can track the development of actions and sales goals of the distributor during the year. The distributor sends this information to the company.

This better aligned relationship helps the company in launching new products, communication of strategies, sales promotions and exclusive sales in the channel. The company begins to participate more strongly within the decision of the distributor. The distributors are benefited with better margins, sharing of strategies, priority in product launches, territorial exclusivity, sales force training, which are factors that improve their profitability and their competitiveness in relation to competition.

By adopting the distribution programme, the company manages to reduce changes of its distributors, which ensures longer and mature relationships. This perma-

nence of distributors in the programme demonstrates that the value proposition offered by the company is attractive and ensures strategic alignment. The distribution network seeks proposals that add value to its business, so that the supplier needs to differentiate itself to attract the best distributors.

The programme sets clear targets for distributors. In this regard, making the numbers and objectives clear avoid future conflicts due to the subjectivity of information. Since the programme offers benefits, these goals can be monitored and charged by the company. The programme encourages the creation of a cooperative environment. The greater influence of the company on decisions of promoting products creates a more effective communication of business strategies to the end customer.

Brazilian market demands a large number of new products and releases are constant. The role of the distribution system in the dissemination and demonstration of these products increases the penetration of the market because with the distribution network the number of customers affected is greater, which increases the efficiency of investments made by the company.

Distributors do not yet realise an improvement in service quality provided by the supplier. They charge this differentiation through the provision of services, not only in granting discounts. It is then the challenge of formulating a different and internal standard of service for distributors according to their segment.

The company is concerned about not falling into the so-called comfort zone and not exploring all the benefits of a relationship programme with distributors. Such action prevents that only the financial aspect is valued by the distributor, since in a relationship marketing the company tends to assess not only the product and associated service, but the relationship as a whole (Gyau et al., 2011). Therefore, the perception of value and, consequently, the satisfaction of the distributor are not linked only to products and services, but to the maintenance of the relationship with the supplier (Ravald and Grönroos, 1996).

This qualitative research has its limitations due to the small group studied, in which two distributors and three managers were interviewed. According to Yin (2010), the case study unlike quantitative study, does not provide a statistical generalization of the results, but a more analytical generalisation, which contributes to new theoretical insights. Therefore, it is suggested for future studies the adoption of quantitative methods and a larger universe of participants.

As managerial implications, the article may provide a grouping with more variables of relationships in the channel than the items found in the literature. This can be a good introductory guide for managers involved in the field of agricultural inputs in global markets, since companies participating in this channel are multinationals.

## Conflict of Interests

The author has not declared any conflict of interests.

## REFERENCES

- Ameseder CO, Meixner R, Haas MF, Schiefer G (2008). Measurement of the importance of trust elements in agrifood chains: an application of the analytic hierarchy process. *J. Chain Network Sci.* 8(2): 153-160.
- Anderson E, Coughlan AT (2002). A Channel management: structure, governance and relationship management. In: Weitz, B.A. and R. Wensley (eds.), *Handbook of Marketing*, London: Sage Publications. pp. 224-247.
- Ballou RH (2006). *Gerenciamento da Cadeia de Suprimentos - logística empresarial*. 5. ed. Porto Alegre: Bookman.
- Bobot L (2011). Functional and dysfunctional conflicts in retailer-supplier relationships. *Int. J. Retail Distribution Manage.* 39(1): 25-50.
- Caceres RC, Paparoidamis NG (2007). Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty. *Eur. J. Market.* 41(7-8): 836-867.
- Cannon JP, Sheth JN (2000). Developing a Curriculum to Enhance Teaching of Relationship Marketing. In: Sheth JN, Parvatiyar A (eds.). *Handbook of Relationship Marketing*. Thousand Oaks: Sage.
- Churchill GA, Peter JP (2005). *Marketing: criando valor para o cliente*. São Paulo: Saraiva.
- Claro DP, Claro PBO (2010). Collaborative buyer-supplier relationships and downstream information in marketing channels. *Ind. Market. Manage.* 39: 221-228.
- Coronado JJA, Bijma JOO, Lansink AO (2010). Relationship characteristics and performance in fresh produce supply chains: the case of the Mexican avocado industry. *J. Chain Network Sci.* 10(1): 1-15.
- Coughlan AT (2002). *Canais de marketing e distribuição*. 6. ed. Porto Alegre: Bookman.
- Day GS (2000). *Managing Market Relationships*. *J. Acad. Market. Sci.*, (28): 1-24.
- Deimel MM, Frentrup L, Theuvsen L (2008). Transparency in food supply chains: empirical results from German pig and dairy production. *J. Chain Network Sci.* (8): 21-32.
- Doney PM, Cannon JP (1997). An examination of the nature of trust in buyer-seller relationships. *J. Market.* 61: 35-51.
- Doney PM, Barry JM, Abratt R (2007). Trust determinants and outcomes in global B2B services. *Eur. J. Market.* 41(9/10): 1096-1116.
- Frazier GL (1999). Organizing and managing channels of distribution. *J. Acad. Market. Sci.* 27(2): 226-240.
- Gyau A, Spiller A (2009). An integrated model of buyer-seller relationship performance in agribusiness: the partial least squares approach. *J. Chain Netw. Sci.* 9(1): 25-41.
- Gyau A, Spiller A, Wocken C (2011). Price or relational behaviours? Supplier relationship management in the German dairy industry. *Brit Food J.* 113(7): 838-852.
- Hingley MK (2005). Power to all our friends? Living with imbalance in supplier-retailer relationships. *Ind. Market. Manage.* 34: 848-858.
- Hsieh CC, Chang YL, Wu CH (2014). Competitive pricing and ordering decisions in a multiple-channel supply chain. *Int. J. Prod. Econ.* 154: 156-165.
- Hutt MD, Speh TW (2002). *B2B: Gestão de marketing em mercados industriais e organizacionais*. 7 ed. Porto Alegre: Bookman.
- Ivens BS, Pardo C (2007). Are key account relationship different? Empirical results on supplier strategies and customer reactions. *Ind. Market. Manage.* 36(4): 470-482.
- Jack EP, Raturi AS (2006). Lessons learned from methodological triangulation in management research. *Manage. Res. News*, 29(6): 345-357.
- Jensen JD (2009). Market power behaviour in the Danish food marketing chain. *J. Chain Netw. Sci.* 9(1): 43-58.
- Kumar N (2005). The power of power in supplier-retailer relationships. *Ind. Market. Manage.* 34: 863-866.
- Luo Y, Liu Y, Xue J (2009). Relationship investment and channel performance: an analysis of mediating forces. *J. Manage. Stud.* 46(7): 1113-1137.
- Mcneil M, Wilson R (1997). Satisfaction in the Wholesaler-Retailer Relationship: The Experience of Red Meat Retailers in Western Australia. *Agribusiness* 13(6): 569-577.
- Mnagro M (2011). Brazil – A top player in agribusiness and seeds. Available at: <<http://www.mnagro.com.br>>. Accessed 29 September 2011.
- Mohr J, Fisher RJ, Nevin JR (1999). Communicating for better channel relationships. *Market. Manage.* 8(2): 38-45.
- Morgan RM, Hunt SD (1994). The commitment-trust theory of relationship marketing. *J. Market.* 58(3): 20-38.
- Naudé P, Buttle F (2000). Assessing Relationship Quality. *Ind. Market. Manage.* 29: 351-361.
- Neves MF (2006). Building Joint Ventures in 6 Steps: A South American Case. *Probl. Perspectives Manag.* 4(4): 12-25.
- Papassapa R, Kenneth M, Nigel B (2005). Relationship quality as a predictor of B2B customer loyalty, Dealing with Dualities - 21st Annual IMP Conference, IMP Group, Rotterdam, Netherlands.
- Payan JM (2007). A review and delineation of cooperation and coordination in marketing channels. *Eur. Bus. Rev.* 19(3): 216-233.
- Pérez AMG (2010). Inter-firm resources and the role of partners as determinants in the configuration and performance of interorganisational relationships. *J. Chain Netw. Sci.* 10(3): 173-183.
- Ravald A, Gronroos C (1996). The value concept and relationship marketing. *Eur. J. Market.* 30: 19-30.
- Reynolds N, Fisher C, Hartmann M (2009). Determinants of sustainable business relationships in selected German agri-food chains. *Brit. Food J.* 111(8): 776-793.
- Richardson RJ (1999). *Pesquisa social: métodos e técnicas*. São Paulo: Atlas.
- Rosenbloom B (2002). *Canais de marketing: uma visão gerencial*. São Paulo: Atlas.
- Rosenbloom B (2007). Multi-channel strategy in business-to-business markets: Prospects and problems. *Ind. Market. Manage.* 36 (2007) 4-9.
- Samaha SA, Palmatier RW, Dant RP (2011). Poisoning Relationships: Perceived Unfairness in Channels of Distribution. *J. Market.* 75: 99-117.
- Sanzo MJ, Santos ML, Vázquez R, Álvarez LI (2003). The effect of market orientation on buyer-seller relationship satisfaction. *Ind. Market. Manage.* 32: 327-345.
- Sharma A, Mehrotra A (2006). Choosing an optimal channel mix in multichannel environments. *Ind. Market. Manage.* 36: 21-28.
- Sezen B, Yilmaz C (2007). Relative effects of dependence and trust on flexibility, information exchange, and solidarity in marketing channels. *J. Bus. Ind. Market.* 22(1): 41-51.
- Siqueira ACB (2005). *Marketing empresarial, industrial e de serviços*. São Paulo: Saraiva.
- Stanko MA, Bonner JM, Calantone RJ (2007). Building commitment in buyer-seller relationships: A tie strength perspective. *Ind. Market. Manage.* 36: 1094-1103.
- Stern L, El-Ansary AI, Coughlan AT (1996). *Marketing channels*. 5th ed. New York, NJ: Prentice Hall.
- Su Q, Song Y, Li Z, Dang J (2008). The impact of supply chain relationship quality on cooperative strategy. *J. Purchasing Supply Manage.* 14: 263-272.
- Teixeira L, Neves MF, Scare RF (2004). Auditoria e sistema de informação em canais de insumos do agronegócio: proposta de uma ferramenta de pesquisa. *Gestão & Produção*, 11(3): 399-411.
- Theisen G (2010). O mercado de agroquímicos. In: *II Simposio sobre metodologias de laboratório de pesquisa agropecuária*, 2010, Pelotas-RS. Anais... Pelotas: EMBRAPA, CFACT. Available at: [http://www.cfact.embrapa.br/eventos/2010/met/palestras/28/281010\\_PAINEL3\\_GIOVANI\\_THEISEN.pdf](http://www.cfact.embrapa.br/eventos/2010/met/palestras/28/281010_PAINEL3_GIOVANI_THEISEN.pdf). Accessed 27 September 2011.
- Ulaga W, Eggert A (2006). Relationship value and relationship quality: Broadening the nomological network of business-to-business

- relationships. *Eur. J. Market.* 40(3-4):311-327.
- Vargo SL, Lusch RF (2011). It's all B2B...and beyond: Toward a systems perspective of the Market. *Ind. Market. Manag.*40: 181-187.
- Wilson H, Daniel E (2007). The multi-channel challenge: A dynamic capability approach. *Ind. Market. Manage.*36 (2007) 10-20
- Wilson NT Hall N, Fields D (2011). Measuring Retail Service Quality in Farm Supply Cooperatives. *International Food Agribusiness Manage. Rev.* 14(1): 1-22.
- Yin RK (2005). *Estudo de caso: planejamento e métodos.* 3.ed. Porto Alegre: Bookman.
- Yin RK (2010). *Estudo de caso: planejamento e métodos.* 4.ed. Porto Alegre: Bookman.
- Zhuang G, Zhou N (2004). The relationship between power and dependence in marketing channels: A Chinese perspective. *Eur. J. Market.* 38(5/6): 675-693.

**Appendix A.** Opinion of distributors and sales distribution managers in relation to the research variables.

Variables	Opinion of distributors and sales distribution managers
Compromise	<p><b>Distributor A:</b> It is not easy to change suppliers. Customers associate the store with a brand or product. We created an identity, which is good, both to the supplier and the distributor. But we must be alert to the direction of the company. If there is no agreement, in some cases it will be necessary to vary the supplier.</p> <p><b>Distributor B:</b> No opinion was issued in this variable.</p> <p><b>Distributor C:</b> We are committed to the established goals, which we need to achieve to avoid being penalized on the final evaluation.</p> <p><b>Managers of distribution and sales:</b> We can not say that the compromise between distributors and companies will always be kept in 100% of cases. It is very common to have a change in commitment between the parties, even with the distributors who participate in the distribution program. With the strong entry of generic market, many distributors have reconsidered their "connections" with the industry. However, maintaining this relationship is a way to strengthen relationships and regulate its distribution system.</p> <p>It is certainly possible to maintain this relationship. We have several examples of programs where strengthening of the relationship is reached. Nowadays, the distributors have sales goals, but also require the company to assist in achieving the goals and promoting products. This extends the engagement between industry and distributors.</p>
Communication, trust and cooperation	<p><b>Distributor A:</b> No opinion was issued in this variable.</p> <p><b>Distributor B:</b> The communication channel is essential and meets the needs. We represent the company in the field and it should always be informed about the intentions of the organization, of visits by managers and representatives, in addition to communication via phone, which allows constant updating. We know what the company needs to defend its interests, but I'm sure that if I do my part, the company will keep its word. I do not believe in opportunism in this market. Such behavior can destroy the trust.</p> <p><b>Distributor C:</b> No opinion was issued in this variable.</p> <p><b>Managers of distribution and sales:</b> The program created by the company for the relationship between distributors expanded its scope to be more and more closer to distributors. A program is only effective if it is well communicated and transparent for all involved, including the distributor's sales force. This elevates communication and interaction.</p> <p>The environment of credibility has to be intense, even in cases where the Distributor does not participate in any program. Without trust, there is no progress. With regard to the clear rules, this is one of the main points in which all the companies are based. Investments are high and, to get the approval of the matrix, the rules must be clear and 100% auditable. It is impossible to keep a program on the market if it does not happen.</p>
Behavior monitoring	<p><b>Distributor A:</b> No opinion was issued in this variable.</p> <p><b>Distributor B:</b> We need to monitor the behavior of the company. We are led to practice standards and policies established by the company. Sometimes other competitors end up not fulfilling the same rigor and ended up overseeing the behavior of other distributors. I am also aware of the business practices of pricing policies and total direct sales in my area of expertise.</p> <p><b>Distributor C:</b> No opinion was issued in this variable.</p> <p><b>Managers of distribution and sales:</b> Supervision needs to be part of the rule and it should be clear. This is good for both sides. Even if this is frowned upon by some distributors, compliance is necessary and well accepted by the majority.</p>
Quality of service	<p><b>Distributor A:</b> I do not clearly notice a differentiated treatment for the services provided by the supplier in question. The fulfillment of the order has the same treatment as other distributors, as well as the credit service and logistics areas. In short, I still can not see a difference at this point.</p> <p><b>Distributor B:</b> No opinion was issued in this variable.</p> <p><b>Distributor C:</b> No opinion was issued in this variable.</p> <p><b>Managers of distribution and sales:</b> The program brought improvements. It is possible to design a program where the Distributor has to do certain actions and it can be included as part of the process to be measured and recognized.</p>

## Appendix A. Cont'd.

Conflict resolution and use of legitimate power	<p><b>Distributor A:</b> No opinion was issued in this variable.</p> <p><b>Distributor B:</b> Flexibility must exist. We can meet an unplanned situation or face some event that was not expected. Moreover, we always count on the help of the supplier to adapt quickly to the market.</p> <p><b>Distributor C:</b> The supplier needs to understand the Distributor and vice versa. You can not resort to threats or go over the other party to resolve the problems. Partnerships like this have long life.</p> <p><b>Managers of distribution and sales:</b> In case of conflicts, a clear and fundamental rule is the basis for understanding. If you have clear rules, it's easy to make a decision in times of conflict. At first, it may sound like inflexibility, but over time, you can create credibility, transparency and sense of justice for all program participants.</p> <p>We need to assess each case differently to make sure that the rules of the program is the basis for conflict resolutions. However, we need to have the maturity to be flexible according to the parties involved.</p> <p>We do not intend to coerce our partners. We have the possibility of an open dialogue for understanding and preventing confrontations. Conflicts where there is need for the use of power usually results in a short term relationship and will eventually end.</p>
Satisfaction	<p><b>Distributor A:</b> No opinion was issued in this variable.</p> <p><b>Distributor B:</b> Participation in the program distribution has greatly improved relations with the company. I realized during that time that the supplier really cares about my business and intends to expand the volume traded. The financial assessment is important because it makes me more competitive in the market and makes the benefits of this interaction between Distributor and company be profitable for my business. But there are other factors, such as participation in training courses, which really counts.</p> <p><b>Distributor C:</b> No opinion was issued in this variable.</p> <p><b>Managers of distribution and sales:</b> It is the responsibility of the supplier to always show the strengths of the program and improve each process that exists in it. If the supplier does not do it over time, you enter into a process in which satisfaction can only be related to the financial part and this can be seen as the only determining factor for sales. This is the great challenge for the longevity of distribution programs. Having other priorities, beyond the financial issue, can cause the relationship to be long lasting.</p>

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