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Review

## Conditions for female and young Brazilian entrepreneurs: Common aspects for guiding public policies for innovative ventures

Yára Lúcia Mazziotti Bulgacov<sup>1\*</sup>, Denise de Camargo<sup>2</sup>, Maria Lucia Figueiredo Gomes de Meza<sup>3</sup> and Siglinde K da Cunha<sup>1</sup>

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Entrepreneurship and innovation are complex processes which are difficult to grasp and generalize because of the multiple actors involved and the diversity of historical, social, cultural, geographical and institutional contexts in which these processes take place. The aim of this article is to identify the structural processes concerning the exclusion of Brazilian young people and women from innovative employment based on two previous studies conducted by the authors. The questions that are raised are: Do young entrepreneurs and women entrepreneurs have any shared social interests that could influence public policies in terms of entrepreneurship and innovation in Brazil? What positions do the two segments occupy in the Brazilian reality? Are there any social processes regarding the reproduction and transformation of social patterns? To answer these questions, this study begins with the debate regarding the changes that have taken place in the world of work that have motivated young people and women to become entrepreneurs. The study then defines important concepts in the literature on entrepreneurship and innovation. This is followed by a discussion of the real socio-economic and cultural conditions for the participation of women and young people in entrepreneurship in Brazil. The results show that both young people and women share conditions of precarity when it comes to being innovative entrepreneurs. To combat this, public policies are required to provide a culture of education to help them overcome the economic, political, institutional and social challenges involved.

**Key words:** Entrepreneurship, young people and women, public policies.

### INTRODUCTION

There are many ways to become an entrepreneur and innovate. The multiple actors involved, with their unique aspects and the concrete relationships that they build

with one another, in addition to the historical, social, cultural, geographic and institutional context in which they operate, make entrepreneurship an innovation process

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that is difficult to understand and generalize. Innovation and entrepreneurship are complex, contextualized and dynamic phenomena.

Innovation and entrepreneurship, the themes of this article, are very important to Brazil due to its developing economy and its drive to enter the competitive global market.

The aim of this study is to contribute to the knowledge concerning the potential for women and young entrepreneurs to innovate. These two segments of the Brazilian population have grown significantly in recent years, as has their share of the labor market. It is for this reason that we are returning to two studies that we conducted recently. The first has to do with the meanings of the entrepreneurial practices of women (Camargo et al., 2010) and the second looks at developments concerning young Brazilian entrepreneurs (Bulgacov et al., 2011).

We have returned to these themes to answer the following questions: Do young entrepreneurs and women entrepreneurs have any shared social interests that could influence public policies in terms of entrepreneurship and innovation in Brazil? What positions do the two segments occupy in the Brazilian reality? Are there any social processes regarding the reproduction and transformation of social patterns? To answer these questions, this article is divided into six parts. Following this introduction, the second section looks at the major transformations in the world of work, which have encouraged young people and women to join the ranks of the entrepreneurs. In the third part, the concepts of entrepreneurship, innovation, decent work and precarious work are defined, characterizing the profile of the entrepreneurial activities of women and young people in Brazil. The fourth and fifth parts look at the real socio-economic and cultural conditions for women and young people to indulge in entrepreneurial activities. In the sixth and final part, the final considerations are given.

## **MAJOR CHANGES IN THE WORLD OF WORK**

To understand entrepreneurship among the myriad of labor relations it is important to consider the major changes that have fragmented and diversified the working class in the twenty-first century, bearing in mind that it is a time of globalization, as pointed out by Antunes and Alves (2004). However, it could also be argued that the capitalism is becoming more flexible and productive, and that society has created new forms of exploitation under the "mask" of flexibility.

Antunes and Alves (2004) discuss four major transformations in the contemporary labor market. The first occurred in the wake of the decline of Taylorism and Fordism. The result is a reduction in the traditional, stable, industrial, manual and specialized manufacturing

proletariat, the heir of the Taylorist and Fordist style of industry. The proletariat has shrunk due to the productive restructuring of capital, making way for new more unregulated forms of work, greatly reducing the number of workers who enjoy the stability of formal employment. With the development of labor flexibilization and the shift away from productive physical space and the introduction of computerized machinery, such as telematics, a new line of workers has been identified (diminished stable proletariat) to meet the new needs of these new modalities (the post-Taylorism-Fordism model).

The second transformation, bucking the previous trend, is characterized by the worldwide increase of the new manufacturing and services proletariat found in various modes of precarious work. These are the outsourced, part-time workers whose numbers have grown on a global scale. Today, this expansion has affected the workers left over from the Taylorist-Fordist era of specialization, who are now disappearing. With the disruption of the welfare state in the northern countries and the spread of structural employment, transnational capital has provided alternatives for increasingly deregulated "informal" forms of work, with outsourcing being a point in question. This process also affects, albeit differently, countries with intermediate industrialization such as Brazil, Mexico, Argentina and other Latin-American countries. Following a huge expansion of their proletariat, these countries are now undergoing significant deindustrialization processes, resulting in the expansion of precarious work, part-time work, temporary, outsourced informal employment and high levels of unemployment.

The third trend has an expressive meaning in the contemporary world of work: a significant increase of the number of working women, who now account for over 40% of the workforce in a number of advanced countries. This growth has to be absorbed by the market, preferentially in the universe of part-time work, which is precarious and deregulated.

Finally, there has been an increase in the number of medium wage earners in the services sector, which initially absorbed a significant portion of workers forced to leave the productive and industrial sectors due to productive restructuring, deindustrialization and privatization, as was the case of bank employees in Brazil in the 1990s.

## **ENTREPRENEURIAL ACTIVITY, INNOVATION, PRECARIOUS WORK AND DECENT WORK**

This section contributes to the debate as to how women and young people are becoming entrepreneurs and innovators in Brazil and also looks at decent work and precarious work.

Entrepreneurial activity in the context of globalization is discussed using more descriptive concepts of the terms involved in the field of entrepreneurship. The concept that



reduces the reasons for entrepreneurship to personality traits (Fillion, 1999; Gartner, 1988) is contested. This concept individualizes and psychologizes the phenomenon, isolating it from the context of social relations, placing it in an economy with a model that is not questioned (Camargo et al., 2008). This trend is counteracted by what is called work with psychological and economic perspectives, understanding the sciences as undertakings involved in social relations (Polanyi, 2000; Ramos, 1989).

Concerning the subject of the activity, it is worth noting the difference between entrepreneurial "action" and entrepreneurial "behavior". The difference between action and behavior is drawn here in accordance with Ramos (1989), adapting it to the entrepreneurial field. According to this author, action is something performed by an agent, something deliberate, making it an ethical form of conduct, whereas behavior is socially conditioned and is at the mercy of episodic events, motivated by convenience or necessity, a dimension that human beings have in common with animals. To Ramos, when a human condition is presumed to be merely social, the fluidity of individuality, a characteristic of behavior, is inevitable; the subject is at the mercy of needs and contingencies. However, entrepreneurial "behavior" is understood as being motivated by the need to survive, with few possibilities of choice, and conditioned by limiting factors of poverty.

In the present study, entrepreneurial action is viewed as part of our lives and as an inherent possibility for the human condition, which involves awareness, conscience, imagination, creativity, exploring the unknown and learning. Entrepreneurship is viewed as a learning process (Wenger, 1998), and therefore as a matter of engagement and opportunity. From a behavioral viewpoint, it is a creative activity in the sense of the capacity to identify opportunities and take risks.

The notion of innovation used in this work is not limited to the Schumpeterian definition, being too restricted to evaluate innovative entrepreneurship in Brazil. We have adopted the notion included in the Oslo Manual, which views innovation as:

"the implementation of a new or significantly improved product (good or service) (Schumpeterian view) or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. (Organisation for Economic Co-operation and Development [OECD], 2005. p. 46)."

In this case, innovation ranges from changes in production and/or services to productive and/or operational processes, marketing and organizational methods. Innovation is a process that makes use of factors of production (land, capital, labor and technology), which are interrelated in a social network, an exchange of knowledge to generate the four aforementioned results. These, in turn, do not depend only on internal characteristics of organizations but above all on their

surroundings, on the conditions imposed by a social, economic, technological, political and institutional system in which the organization is embedded and which somehow characterizes the local innovation system (Freeman, 2004; Lundvall, 1992). Furthermore, in this system, a characteristic factor that is relevant to innovation processes is learning capacity. In developing countries and even in developed countries, this capacity is marked by the gap between public and private investments in the development of human resources. In the case of developing countries, there is uneven distribution of access to information, education and training. This is heightened by the fact that universities and research institutes are relatively isolated and have little collaboration with private companies (Gregersen et al., 2004).

Entrepreneurship is essentially a learning process through practices that are merged with participation, negotiation and cumulative experience, perturbation and discontinuity for negotiating meanings. Entrepreneurship is experimental and fundamentally social, realigning experiences in relation to context and being transformed by that context. It is seen as a learning process that, through practice, transforms the identities and skills of individuals, enabling them to participate in the world, to change something or everything or change something about themselves. Entrepreneurial action paves the way for participation, i.e., it constitutes personal stories in relation to communities, connecting the past to the future in a process that is both individual and, at the same time, collective.

The globalization scenario, handled as a complex set of processes and forces of change that cross national frontiers, connecting communities and organizations and forming new combinations in space and time (Hall, 2000), has led to a set of phenomena that lead entrepreneurship to be understood as a cultural fact, like a political arena, where there is conflict between different views of society and different proposed solutions for fundamental and peripheral questions. To recognize the entrepreneur is to recognize the values embedded in cultural symbols, expressed in thoughts, attitudes, conduct and practices, with meanings that manifest in the regionalized social order.

In this context, the feminization of the world of work will be positive if it means an advance in the process of female emancipation and thus minimizes the forms of patriarchal domination in the home (Nogueira, 2004). Conversely, it will be negative if these changes significantly exacerbate the precarious position of working women.

In the same context, the inclusion of young people in the labor market will be positive if it means opportunity-driven entrepreneurial activities. It will be negative if this activity is necessity-driven and even more so if it means leaving school early to begin working. This would mean abandoning professional training and becoming a

segment of the population that is vulnerable to precarious work.

With these findings, it is necessary to understand the concept of precarious work. The term precarity means that work is becoming increasingly precarious because of more people informally earning wages for professional work or being self-employed. According to Mattoso (1999, p. 8), precarity of work is the “the deterioration of labor relations, with the spread of deregulation, temporary contracts, false cooperatives, contracts drafted by companies or even unilateral contracts”. These are the characteristics of precarious work, with no fixed income, working part-time and with no social security payments, which means no right to retirement with a pension.

According to Cattani and Holzmann (2006, p. 203), there are at least two dimensions to precarious work: “the lack of or a reduction in a worker’s rights and guarantee of employment and the quality of working conditions”. In the former, it is considered a step backwards in relation to the constitutional victories of workers in terms of their rights and the bargaining power of their trade unions; the latter has to do with the relationship between earnings and the amount of work, this being complemented by aspects directly linked to the performance of working activities. The precarity of work proves to be a sequence of losses, such as professional losses (temporary contracts, flexibility on layoffs) and the suppression of rights (such as paid vacations, breaks, sick-leave, pensions and wage regulations). This is the reality faced by many workers, such as freelancers, hawkers, travelling salespeople, artists and those who do seasonal work, meaning that a large number of workers are in a vulnerable situation.

Thebáud-Mony and Druck (2007) claim that this process affects all workers irrespective of their statutes, and that this has led to a steady decline in working conditions and health conditions for workers. It has also affected the effectiveness of trade unions. Thus, this lack of job security and precarity are causes of social vulnerability, a loss of a sense of belonging and a connection with “places” (Castells, 1998). In this sense it is worth recalling the claim of Hirata and Pretéceille (2002) that this is a scenario of social precarity as a “rule” that redefines marital and family situations and widening the generation gap. This situation may account for why more women are becoming active in the labor market.

Therefore, freelance work and casual labor and entrepreneurship do not constitute either employment or wages since there is no formal contract that characterizes the difference between paid employment and work. However, there are informal contracts that establish working relationships that are not formal employment, as is the case of freelance work and self-employment. According to the definition of the Brazilian Institute of Geography and Statistics and the National Domestic Sampling Research Program (IBGE/PNAD, 2006), the alternative to

unemployment is self-employment. This is the option for workers who try their hand at entrepreneurship, either alone or with a partner, without employing wage earners to help them.

Holzman (2006, p. 84), when analyzing the statistics of the IBGE/PNAD, claims that the self-employed and people with necessity-driven small businesses “constitute the personality symbol of the neoliberal ideal, which, in an apology for the advantages that he enjoys, covers up the precarity that their situations generally entails”. According to the same author, freelance work or necessity-driven entrepreneurship works as a spillover of unemployment, with 78.3% of these workers making no social security contributions.

Therefore, entrepreneurship, especially when it results from a need to survive, is the fruit of these changes in labor relations and employment. It often results in the fragmentation of personal projects, accelerates the pace of life and becomes part of daily life in that it makes people more competitive and organize their working time differently.

In contrast, with the concept of precarious work, the ILO (2006) views decent work as productive, adequately remunerated and performed in conditions of liberty, equity and safety, ensuring a life of dignity. Therefore, it is a form of work that satisfies personal and family needs for food, education, housing, health and safety. It also ensures social protection when the worker is unable to work, i.e., in times of unemployment, sickness, following an accident, etc. It also guarantees an income following retirement, with the fundamental rights of workers being respected (ILO, 2006). In other words, decent work is based on quality employment that ensures people an adequate income according to their needs and personal and family projects, offering protection from risks and during times of inactivity (retirement).

#### **PARTICIPATION OF WOMEN IN THE LABOR MARKET: THE GROWING PARTICIPATION OF THE BRAZILIAN FEMALE ENTREPRENEUR AND HER REAL SOCIO-ECONOMIC AND CULTURAL CONDITIONS**

According to Montagner (2000), the rapid transformation of the situation of women in Brazilian society is largely due to their growing financial contribution to maintaining the family nucleus, especially in poorer families. The author accurately depicts the growing homogeneity of the participation of women in the different family situations under study. This demonstrates the importance of women’s contributions to their family income.

According to the data published by PNAD/IBGE (2006), women made up 52% of the active population in 2006. Their share in the labor market has grown expressively, with 42,600,000 women at work in 2006, with this number

constantly increasing.

One of the factors that account for this growth is that women have a higher level of schooling than men. Other factors at play include changes in the family structure, with families having fewer children, and new values regarding the position of women in Brazilian society. The level of schooling plays an especially important role in people's standard of living. It is considered a strategic element of change in the social reality of a country as it is one of the main indicators for measuring inequality. In recent years, in Brazil, schooling has seen major improvements, with falling illiteracy rates and more frequent attendance. However, this process has been slow and marked by considerable social and, above all, regional differences.

The growing inclusion of women in the labor market in countries in the southern hemisphere is shown in the work of Hirata (2006) as a positive consequence of globalization. However, although they have had the opportunity to form new social relationships, considering that many had never worked before, the downside is that many work in precarious and vulnerable conditions.

In the family context, relations between men and women have also changed. The number of women as the head of the household increased considerably between 1996 and 2006, rising from 10,300,000 to 18,500,000. In relative terms, this is an increase of 79%. During the same period, the number of male heads of the household rose by 25% (IBGE/PNAD, 2006).

Certainly, one of the aspects that lead family members to name a woman as head of the household has to do with the greater participation of women at work and, consequently, they will make a greater contribution to the family income. In 1996, the proportion of women household heads was 51%, rising to 54% in 2006 (IBGE/PNAD, 2006).

Despite the growing participation of women, there are many factors that restrict how much a woman can work and contribute to the family income. These factors include a woman's responsibility to her family and domestic chores, maternity and looking after her children. These factors show that the inclusion of women in the labor market is limited by family responsibilities.

The growing share of women in the labor market is also reflected in the data of the GEM Brasil study (2007) regarding female entrepreneurship.

The growing number of female entrepreneurs is a characteristic of entrepreneurship in poor or developing countries. The data of the GEM Brasil study (2007) show that Latin American countries top the ranking of female total early-stage entrepreneurial activity (TEA). The seven countries with the highest rates of female entrepreneurship, in descending order, are: Peru (26%), Thailand (26%), Colombia (19%), Venezuela (17%), the Dominican Republic (14.5%), China (13.4%) and Brazil (12.7%).

These data show that a high rate of female

entrepreneurship is not necessarily a positive factor regarding the social, economic and cultural position of women in the current society of these countries. In general, considering the data of the GEM study, these countries are also the countries with the highest poverty levels and the highest levels of inequality that create or relocate entrepreneurship as an alternative for survival and inclusion in the labor market. As entrepreneurs, women seek to balance their domestic, family and working lives as they need to complement the family income or even keep the family on their own. At the same time, they seek professional satisfaction and attempt to build an identity and be included in their community.

The ILO Report (2007) recognizes these factors and identifies some worldwide trends regarding working women. At the same time that entrepreneurship allows women greater flexibility, which can help them with their other social responsibilities, entrepreneurship still absorbs a lower percentage of women in comparison with the number of women with jobs and wages. There are two exceptions, two extremely poor regions: Sub-Saharan Africa and the Indian Sub-continent. In these regions, the number of female entrepreneurs is higher than the number of women wage earners. The situation of women is precarious, not only in terms of work but also in relation to men and their family. The role of the female entrepreneur is complementary, subordinate and secondary in the post-Fordist production process, in which flexibility and precarity are more cruelly imposed on these women than they are on men. Despite the growing number of female entrepreneurs, they face more difficulties than men to overcome poverty.

Analyzing the case of Brazil, 2007 is a significant year because for the first time women reversed a historic trend in terms of their participation in entrepreneurship, accounting for 52% of the entrepreneurs in the country from 2001 to 2007 (Table 1).

To understand this greater inclusion of Brazilian women entrepreneurs, we will discuss their motives, the sectors in which they operate, their level of schooling and income, relating these to their mentality, capacity and professional expectations.

In Brazil, necessity is the main factor that motivates women to become entrepreneurs. While 38% of men are necessity-driven entrepreneurs, 63% of women are entrepreneurs for this reason (Table 2). These data are in agreement with the data of the PNAD/IBGE (2006), which show that women seek entrepreneurial alternatives to complement their family income. In recent years, many have become responsible for keeping their families themselves, as the head of the household.

An early-stage entrepreneur is one who has had his business for up to forty-two months (three and a half years). These are included in the total early-stage entrepreneurial activity rate (TEA). These entrepreneurs are subdivided into two types: nascent, who are beginning a

**Table 1** – Early-stage entrepreneurs in Brazil by gender, 2001-2007

Gender	Proportion (%)							
	2007	2006	2005	2004	2003	2002	2001	2001-2007
Male	47.6	56.2	50.0	56.6	53.2	57.6	70.9	56.3
Female	52.4	43.8	50.0	43.4	46.8	42.4	29.1	43.7

Source: GEM Brasil Study 2007.

**Table 2.** Gender and motivation of early-stage entrepreneurs in Brazil, 2007

Gender	(TEA) (%)		Motivation (%)			
	Rate	Proportion	Opportunity		Necessity	
			Rate	Proportion	Rate	Proportion
Male	12,2	48	7,8	54	4,1	38
Female	12,4	52	6,1	46	6,2	63

Source: GEM Brasil 2007.

new venture and seeking space, studying the sector, studying the market, etc., and new businesses, which are already functioning and have had a turnover for at least three months (Global Entrepreneurship Monitor [GEM], 2008).

This is an indicator of a significant movement of women into the labor market. First of all, the rate of women entrepreneurs measured by the TEA is higher than that of men. Considering that in 2007 the motivation for entrepreneurship was necessity-driven, this means that more women are turning to entrepreneurship as a means of survival. Women generally become entrepreneurs due to the need to increase their family income.

On the one hand, entrepreneurial activity provides flexible conditions for Brazilian women and offers them an alternative of freedom to define their professional lives. On the other hand, entrepreneurship is precarious. According to Lindo et al. (2007), despite the freedom to organize their day, female entrepreneurs have longer working days. While a traditional job entails eight hours of work per day, in accordance with Brazilian legislation, an entrepreneur works an average of thirteen hours a day, especially in the early days of the venture, having to sacrifice leisure, time with the family and even vacations. Moreover, a female entrepreneur has concerns over invested resources and the responsibility for paying her employees and the consequent well-being of these people and their families.

The origin of this feature of female entrepreneurial action lies in the traditions of society and the persistence of pressures and expectations for women to look after the home and take care of their children. In addition to this cultural inheritance there are the added demands of the current production model. This means that entrepreneurial

activity is an alternative for workers who cannot find jobs in the formal work market, and this leads to precarity at work. This precarity, along with a drop in family income, pressures women to undertake necessity-driven entrepreneurial activities. In other words, these new women generate a complementary source of income and increasingly act as the bread winner in the home.

Regarding female entrepreneurial activity, according to the ILO Report (2007), women face greater challenges when it comes to entering the formal market, finding an occupation and acting as entrepreneurs in conditions similar to those of men. Most women in poor or developing countries do paid domestic or agricultural work or work in education and the services sector. In Brazil, the first indication of the unfavorable situation of women in comparison to men is that they have a smaller share in formal employment. In 1996, the number of female workers with registered employment was 8% lower than male employees. In 2006, this inequality had grown slightly, rising to 8.6%. Unpaid work for women grew by 83.3% from 1996 to 2006, while for men this growth rate was 56%.

Considering the activity of women as an indicator in the transformation of the female labor market, between 1996 and 2006 the female contingent of the population that was still engaged in agricultural work migrated to the services sector. During this time, the number of female agricultural workers fell by 29.9%. At the same time, female industrial labor dropped 0.95%, remaining relatively stable, whereas female entrepreneurial activities such as commerce and repair work grew by 20.89%. Compared to men, industrial employment during this period saw a rise of 1.02% and work in commercial and repair activities increased by 1.05%, practically in the

same proportion of growth as jobs in industry.

The GEM Brasil (2007) data corroborate this scenario of the profile of female entrepreneurship in Brazil. According to the study, Brazilian women concentrate their activities above all in retail, selling clothes and food and making by catalogue and mail order sales (37%). They also work in transformation, mostly in the garment and food sector, but also in production (27%).

Regarding schooling and income in the world of work and entrepreneurial action, in recent years in Brazil, schooling has seen great improvements. Literacy rates have fallen and attendance has improved. However, this has been a slow process and marked by considerable social differences. Women are in the majority in most of the higher levels of schooling, especially in urban areas, where the average schooling of women is 7.4 years for the total population and 8.9 years for those with an occupation.

For female entrepreneurs, the opposite is true when it comes to their level of schooling. Around 30% of female entrepreneurs have up to four years of schooling, in comparison with 27% of male entrepreneurs. At the other extreme, 19% of male entrepreneurs have over eleven years of schooling, while the rate female entrepreneurs with the same level of schooling is 16% (GEM, 2008).

These data suggest that women are necessity-driven entrepreneurs and, given their educational background, have few opportunities to develop an innovative business that will open up new equal opportunities for them in terms of work and entrepreneurial activities.

Another relevant point is that female entrepreneurs in Brazil have lower incomes than their male counterparts. In 2007, the income of 70% of the country's female entrepreneurs was less than three minimum wages, while this rate for men was 51%. For both men and women, entrepreneurial activity provides a subsistence level income, demonstrating the precarity of entrepreneurship. However, for women this is precarious work in that they seek to fulfill their roles as wife, housewife, mother and entrepreneur at the same time, providing a source of income for the family (GEM, 2008).

## **PARTICIPATION OF YOUNG PEOPLE IN THE LABOR MARKET: THE GROWING PARTICIPATION OF YOUNG BRAZILIAN ENTREPRENEURS AND THEIR REAL SOCIO-ECONOMIC AND CULTURAL CONDITIONS**

In 2008, for the first time in nine years of research, the participation of young entrepreneurs reached and overtook that of the other age groups under study (GEM, 2008). There is a generation of young people entering the labor market through entrepreneurship, and this needs to be analyzed in detail to gauge the characteristics and conditions of this activity.

In a search for the socio-economic underpinnings that help to understand the entrepreneurial actions of young people in Brazil, the background, qualification and schooling indicators and the type of entrepreneurial activity and income are analyzed to understand the recent changes in the rate of entrepreneurship in Brazil. These indicators will be used to outline a typology of entrepreneurial action by young people in Brazil.

What is the educational background of young Brazilian entrepreneurs? Regarding the education levels of young entrepreneurs aged between eighteen and twenty-four from 2002 to 2008, 61% of them had between five and eleven years of schooling, 21% had up to four years and only 17% had over eleven years of schooling (Table 4).

The low level of schooling of young entrepreneurs has a considerable impact on their chances of success. This socio-economic characteristic of the young Brazilian entrepreneur limits his chances of personal growth and success in business. However, although there are wide variations, there is a small trend towards improvement in the educational levels of young entrepreneurs in terms of higher education. But what really stands out regarding the schooling of young entrepreneurs is the difference between the education of the necessity-driven young entrepreneur and those driven by opportunity<sup>1</sup>

Tables 3 and 4 show the distribution of young entrepreneurs aged eighteen to twenty-four according to their sector of activity in the years under study. Over 50% of these young people operate in consumer services. Normally, this type of service has a low productivity level and requires few qualifications and little experience. The entrepreneurs included in this activity are those who provide personal services, such as cleaning and, conservation. They also include hawkers and travelling salespeople. The proportion of services provided to companies from 2001 to 2008, although not very expressive, doubled and this may be indicative of a trend towards more qualified activities due to improved levels of education in recent years.

The results of the GEM 2008 study clearly show that when services are offered to consumers, the venture is predominantly necessity-driven<sup>2</sup>, whereas ventures offering services to companies are opportunity-driven. The latter are normally entrepreneurial activities where the youngster has already graduated and is seeking to fill a niche in the market. These companies include technology,

<sup>1</sup>According to the GEM report (2008), necessity-driven entrepreneurs are those who open a business because of a lack of alternative employment and income on the labor market, while opportunity-driven entrepreneurs are motivated when they perceive a potential niche in the market.

<sup>2</sup>Necessity-driven or opportunity-driven entrepreneurship is one of the most relevant themes in the GEM study, mainly to know better the nature of entrepreneurship in developing countries. The rate of opportunity-driven entrepreneurship reflects the "upside" of entrepreneurial activity in countries. These entrepreneurs begin their activities to improve their living conditions after observing an opportunity to become an entrepreneur. The other extreme is when people undertake a venture when they are driven by necessity.

**Table 3.** Participation of Young Entrepreneurs (aged 18 to 24), according to sector of activity (Brazil, 2008)

Sector of Activities	Young Early-Stage Entrepreneurs Aged 18 to 24–Brazil –Proportion (%)								
	2008	2007	2006	2005	2004	2003	2002	2001	2002:2008
Extractive Sector	0.0	2.1	4.8	4.1	0.9	1.8	2.2	...	1.9
Transformation sector	22.7	34.0	35.7	24.5	34.8	25.5	28.9	...	29.8
Services to companies	22.7	12.8	16.7	16.3	7.8	10.9	11.1	...	13.4
Services to consumers	54.5	51.1	41.9	55.1	56.5	61.8	57.8	...	54.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	100.0

Source: Greco et al. (2009).

**Table 4.** Young Entrepreneurs aged 18 to 24 by motivation, according to sector of activity (Brazil, 2008)

Setor de Atividades	Tea Total	Motivation	
		Opportunity	Necessity
Extractive sector	0.0	0.0	0.0
Transformation sector	22.7	18.2	33.3
Services to companies	22.7	29.5	4.8
Services to consumers	54.5	52.3	61.9

Source: Greco et al. (2009).

**Table 5.** Predominant characteristics of entrepreneurs aged 18 to 24 (Brazil, 2008)

Typology	Dominant characteristics
Necessity-driven young entrepreneur	28% of Brazilian entrepreneurs 60% with an income between one and three minimum wages 60% with five to eleven years of schooling 70% of ventures provide consumer services
Opportunity-driven entrepreneur	29% of Brazilian entrepreneurs 36% with an income of one to three minimum wages 25% in or have completed higher education 59% are concentrated in services provided to the consumer

Source: adapted and developed from the typology of young entrepreneurs presented by Llisteri (2006). Greco et al. (2009 as quoted in Bulgacov et al., 2011).

specialized services such as consultancy and technical services.

The income indicators of young entrepreneurs show a distressful scenario and reveal perspectives that are less than encouraging. Almost 50% of young Brazilian entrepreneurs earn up to three minimum wages; if we include those who earn up to six minimum wages, this index rises to almost 80%. This scenario is even more depressing when the level of necessity-driven income for young entrepreneurs is analyzed. Of these, 73% earn less than three minimum wages, which calls into question their

capacity for survival and their preparedness and education level (Table 5).

Young necessity-driven entrepreneurs in 2008 accounted for 28% of Brazilian entrepreneurs during the period under study (a higher percentage than the average for the period in question, which was 20.6%). Their income levels were concentrated in the range of one to three minimum wages (the average for the period being 60%). Their level of schooling ranged from five to eleven years (average of 60%). Their ventures were mostly consumer services (70%), followed by the transformation sector

(33%) – (Table 5).

Young opportunity-driven entrepreneurs have a higher level of income (36% with up to three minimum wages and 34% from three to six minimum wages) and a higher level of schooling, with 25% either in university or already graduated. Both have a high concentration of activities in services for consumers and transformation activities. However, opportunity-driven entrepreneurs have more specialized businesses due to their higher level of education and income. Opportunity-driven entrepreneurs provide a higher proportion of services to companies (19%), as this type of service requires higher levels of qualifications and education. Young university students, for instance, faced with a lack of formal work, open their own business with specialized services, such as accounting, legal assistance and assistance with information technology.

The findings shown above regarding the profile of the young Brazilian shows us that young people aged sixteen to twenty-four who become necessity-driven entrepreneurs do so in order to survive. The growing participation of the young entrepreneur is one of the conditions caused by labor market flexibilization and how it reflects on social relations.

Nevertheless, young entrepreneurs cannot be considered a homogeneous group, as two groups of young people have been shown to develop entrepreneurial activities. On the one hand there are young people who leave school without a high school diploma and start working at an early age, and on the other hand there are young people who graduate from college or university and become entrepreneurs to gain their independence or augment their income. These are the ones who come closest to being opportunity-driven entrepreneurs.

The situation of youth in Brazil serves to contextualize the data of the GEM (2008) and explain that the high rate of entrepreneurship among young people is not necessarily a positive factor when it comes to considering the social, economic and cultural position of young people in Brazil today. On the contrary, the situation is linked to precarious working conditions and labor market flexibilization.

Pochmann (2009, p. 2), depicting the scenario of the young people in Brazil affirms that:

“In Brazil we have 37,000,000 youths aged sixteen to twenty-four. Half of these youths do not study. The other half are not in the right grade at school. The grade they are in is not what it should be for their age. The young children of poor people in Brazil only study when they work. We do not have working students, but rather young workers who study. When they are out of work or their income is low, they abandon their studies. This year, half a million young people in high school will abandon school to complement their income. A young person who works and studies needs to commit to a sixteen-hour day, in other words, he does not have enough time to go to

school.”

## CONCLUSION

The aim of this study was to contribute to knowledge concerning the potential for innovation in the entrepreneurial activities of women and young people by answering the following questions: (a) Do young entrepreneurs and women entrepreneurs, in their respective social segments, have any shared social interests that could influence public policies in terms of entrepreneurship and innovation in Brazil? (b) What positions do the two segments occupy in the Brazilian reality? and (c) Are there any social processes regarding the reproduction and transformation of social patterns?

### The Position of Women and Youngsters in the Brazilian Reality

The expressive number of women and young people in entrepreneurial activities in Brazil is a result of the conditions created by labor market flexibilization and how this has reflected on social relations. In most cases, women and young people become entrepreneurs to keep themselves and often their families. Young people also become entrepreneurs to further their studies. Although the numbers show a growing participation in entrepreneurial activities by both categories, the percentage of young people and women as opportunity-driven entrepreneurs remains small. This condition can partly be explained by the socio-economic profile of the country, with its uneven distribution of income, which leaves many families with a very low income, a low level of schooling and little capacity for investment.

Furthermore, the country has an unstable production structure with activities with low productivity levels and precarious work existing alongside activities that use advanced technologies and excessively formalized labor relations. In the case of young people, these socio-economic characteristics prevent them from dedicating themselves to their studies, forcing them into the labor market to find alternatives in order to survive. They also begin to work early to look after their families and obtain resources to finance their studies. Women are in a similar situation regarding alternatives for survival and complementing the family income. On the other hand, this greater participation in entrepreneurial activity in recent years has a positive side, especially in developing economies because it has led to a drive for a higher level of schooling. However, if on the one hand the effort of women to improve formal education has not had a concrete impact on better wages and income, either at home or in their social representation when compared with men, young people have also found it difficult to keep studying

while conducting entrepreneurial activities. This shows that the benefits of entrepreneurship in the country are very weak for both the groups under study.

In terms of the profile of the entrepreneurial activities of women and young people, we can characterize their work predominantly as alternative forms of employment and income due to a lack of option in the formal labor market. Their activities have very little planning, low initial investment and very little specialized formal knowledge in competitive sectors and with low productivity levels. Although entrepreneurship could open up opportunities for improving the life of a poor sector of the nation (Abramovay, 2010), especially for women, who have become providers and heads of the household, these findings are not the case in the data included in the GEM Brasil report (2009), which shows female entrepreneurs involved in activities that are more precarious than promising.

### **The Existence of Social Processes for the Reproduction or Transformation of Social Patterns**

Indeed, the indisputable advances in opportunities for women and young people to join the labor force is in opposition to the persistence of social and cultural factors because in both categories, they need to complement their family income and, in the case of women, be responsible for looking after the children and doing domestic chores. Young people also need to work and study. These matters lead both young people and women into precarious working conditions, no matter whether they are necessity-driven or opportunity-driven.

There are some heavy social restrictions that limit women wage earners and entrepreneurs in countries with poorer economies and developing countries, especially the idea that their main role is to have domestic and reproductive responsibilities. There is also social prejudice regarding occupations that are supposedly better suited to women and the undervaluing of working women, limiting the quality and variety of opportunities that are open to them.

In the case of female entrepreneurs, these restrictions limit their access to credit, investment and their relations in the social context, limiting them only to activities that are deemed suitable for women. This in turn limits their chance of success and growth.

On the other hand, the roles and tasks socially attributed to women regarding their families are a significant obstacle when it comes to gaining access to the sector and remaining there with mobility and a successful business. These factors all determine the conditions for the inclusion of women in the labor market.

Other socially less obvious but equally important limiting factors are the differences in opportunities for

women entrepreneurs. These are evident in the context of social relations or networks, which limit the possibilities for women to succeed as entrepreneurs, especially when they are from poor families, since their relations are limited to the domestic environment and the neighborhood where they live. Added to this list is the lack of access to social infrastructure, such as the availability of crèches, access to housing, security and sanitation, which puts the health of a family at risk and makes it harder for a woman to handle domestic and family matters at the same time as she is involved in entrepreneurial activities.

On the other hand, opportunity-driven young entrepreneurs make up a relatively small group. They tend to have skills for identifying good business and opportunities, manage the early stages of their business, maintain it and sustain its growth. Most of them begin their venture soon after finishing high school or while at university or after graduation. Moreover, it is worth mentioning that the support and sustainability of a young entrepreneur depend on their general context of economic, social and political growth. When it comes to education policy, despite the effort made in Brazil in recent years, a great deal remains to be done to make education a priority for young people. The main question is: have *these* segments been innovative? According to Cunha et al. (2011), Brazil is one of the last countries in the ranking of countries with a potential for innovation. This is a critical situation for a society that views entrepreneurship as a way of overcoming misery, poverty and unemployment while at the same time it is characterized as precarious, unstable and marginalized for both young people and women.

Therefore, we can say that both young and female entrepreneurs in Brazil are only reacting to the circumstances of the environment and fulfill their necessities when they become involved in entrepreneurship. As yet, there are no conditions to proactively pursue entrepreneurship, which is a characteristic of entrepreneurial actions, requiring awareness, imagination, creativity and innovation, which constitute opportunity-driven innovation.

### **Common Points of Social Interest to Subsidize Public Policies concerning Entrepreneurship and Innovation**

Analyzing the common points of the innovative profile of women and young entrepreneurs in Brazil, we can conclude that despite the data of the GEM study showing that both categories have increased their participation in entrepreneurial activities in recent years (2001-2008), the entrepreneurial activities that grew most were precarious. These activities resulted from a lack of opportunity in the formal labor market, attracting women and young people with a lower level of education to participate in activities with little innovation, providing services to the end consumer, with a low level of income.



In the case of Brazilian female entrepreneurs, their recent growing participation in productive activities and their higher level of schooling is a counterpoint to the social restrictions that result in the precarity of their entrepreneurial activities, especially in poor countries. This also opens up a potential for the feminization of poverty in entrepreneurial activity.

The precarious conditions of entrepreneurial activity are not likely to be reversed merely by increasing the number of women and young people in the labor market and those operating as entrepreneurs. This also requires actions through public policies that specially focus on both these groups.

Regarding the general guidelines for formulating public policies for female entrepreneurs, we can specifically highlight:

The development of education and training systems and technical and professional courses for women that focus on non-traditional activities and are directed especially at women who live in poverty;

The drafting and enactment of policies that help women become entrepreneurs, especially micro and small businesses in production chains and local productive arrangements: increasing and improving the experiences of service centers to micro businesses (credit, training, technology, market information), and other policies;

Specific policies to broaden the coverage of social protection, especially in terms of health and retirement or pensions for women entrepreneurs, who currently have no social security;

A stimulus package to integrate the diverse environments of active labor market policies: information about the labor market, transfer and improvements in income, training and professional qualifications, skilled labor intermediation, access to credit and other productive resources, temporary and/or emergency employment programs that enable poor women to build an occupational project and structure their exit routes from poverty (or indigence) and dependence on income transfer programs;

Consideration of the need for flexible working hours and childcare services during these programs;

Training for public managers and other people in charge of formulations of policies and their implementation, monitoring and execution of other gender and race-oriented programs;

Introduction, when possible and suitable, of empowerment actions for women and awareness raising for their husbands and families to help establish more equal and respectful relations in terms of gender and race;

Formulation and enactment of specific policies and programs for women and certain groups of women: women as the head of the household in poor families and with low levels of schooling, women of African descent and indigenous women, young women.

Establishment of permanent systems for monitoring and assessing policies and programs with data broken down by gender and race/color and indicators sensitive to gender and race.

In the case of young people, considering the heterogeneity of their characteristics as entrepreneurs, there now follow a number of policies and programs to support them which, according to Llisterri et al. (2006), are necessary for the development of this segment of the working population. In relation to necessity-driven young entrepreneurs, the author basically suggests motivation and training programs and, in some case, technical aid programs and micro credits. As for opportunity-driven young entrepreneurs, high-level training, tutoring, relationship networks, incubators and mechanisms for seeking capital are recommended. In Brazil, some of these actions have already been taken. Considering policies for young necessity-driven entrepreneurs, for credits, technical aid, training and motivation, there are programs: the First Job Program and the Young Worker Program were set up by the Labor Ministry to help prepare young people for the labor market and alternative forms of generating income. For young opportunity-driven entrepreneurs requiring credit, training, tutoring, relationship networks and incubation, there is the Young Entrepreneur Program, run by the Support Service for Micro and Small Businesses (SEBRAE). It is also important to mention the Social Consortium for Youth Program run by the Labor Ministry, which forms partnerships between government and society to meet the needs of young people and ensure the integration of Public Policies for Employment and Learning.

However, although these public policies for young Brazilians exist, they do not have much of an impact on the results shown by the indicators for both young employees and young entrepreneurs. This is because the policies view young people as a homogeneous group and do not take into account their different reasons for becoming entrepreneurs.

There are many challenges to be faced to promote activities with a higher potential for young Brazilians and Brazilian women to innovate. A national cultural and institutional fabric is required, involving learning, definitions of public policies and, in general, a culture of education. This could pave the way for to break down the barriers that put so many limitations on women and young people as entrepreneurs.

Finally, we believe that the way in which the segments under study innovate portrays their responses to the economic challenges they face. Therefore, they innovate in the sense of inventing their daily lives, which silently govern their submission. At the same time, they innovate by censuring the primacy of the "reality" that excludes them, inventing a "Brazilian art form of doing things, with all its contradictions" (Certeau, 1994), which is still a long way from configuring real innovative opportunity-driven

entrepreneurial activities.

### Conflict of Interests

The author(s) have not declared any conflict of interests.

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*Full Length Research Paper*

# Impact of motivation as HR bundle on performance of teachers of public schools in Bungoma County

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The challenge for managers today is to keep the staff motivated and performing well in the workplace. By understanding employees' needs, managers can understand what rewards to use to motivate them. The goal of most companies is to benefit from positive employee behavior in the workplace by promoting a win-win situation for both the company and workers. This research sought to determine the impact of motivation as a HR bundle on teacher performance of public schools in Bungoma County. The study had the following hypothesis: there is no significant impact of motivation on teacher performance of public schools in Bungoma County. The study adopted descriptive and correlational survey designs. Validity of the research instruments was based on the three overarching forms of validity: content, face and construct validity. Reliability coefficient yielded a Cronbach's alpha of 0.90. The data was analyzed using descriptive statistics and inferential statistics, namely, regression analysis and ANOVA. The main finding of this study was that motivation and as HR bundles had a marginally weak positive and significant association with teacher performance of public schools in Bungoma County.

**Key words:** Motivation, Academic Performance, Public Schools, Bungoma County.

## INTRODUCTION

Examination results from Bungoma County have shown poor Kenya Certificate of Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE) performance in the period of 2002-2012. There is however, need to establish how motivation as a HR bundle affects teacher performance of public schools in Bungoma County (see Appendices 1a and 1b). Ibukun (2003) and Brock-Utne (2006) opines that investment in basic education and training is an ingredient to human capacity building. Such capacity, they note is the foundation needed to realize increased productivity, most importantly

technological innovation. The educational system is vital in producing personnel that is required to function in various facets of national life and development process (Analoui, 2007). With a growing focus on the importance of 'knowledge societies' for equipping countries with a suitable workforce, issues around human resources within the education sector have come under greater scrutiny (Analoui). One of the strongest and most often used arguments for investment in education is the economic argument based upon the Human Capital Theory (Analoui and Karami, 2003). The basic premise of Human

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Capital Theory is that investment in human resources results in improved productivity in an organisation (Armstrong, 2001).

Motivation is a set of courses concerned with a kind of strength that boosts performance and directs towards accomplishing some definite targets (Khan et al., 2010). According to Rizwan et al. (2010), it is an accrual of diverse routes which manipulate and express our activities to attain some particular ambitions. The motivation of an individual envelops all the drives for which he selects to operate in a definite approach. In fact motivation is "inside another person's head and heart" (Fard et al., 2002).

The following theories informed the study: Taylor (productivity theory), Alders (ERG Theory), Maslow (Need Theory), Vrooms (Expectancy Theory), Adams (Social Equity Theory), Herzberg (Two Factor Theory), McGregor (Theory X and Y), Geogopalaus (Path Goal Theory) and Skinner (Reward Theory) (Ajang, 2007). These motivational theories were summed in the Need theory that guided the study. Need Theory posits that needs represent an internal energy force that directs behaviour toward actions that permit the satisfaction and release of the need itself (that is, satiation), suggested by Murray's (1938) system of needs. This need is what drives us to do whatever we do. In this study, training, development, compensation, incentives, reward, recognition and promotion were the institutional needs that the study used to address the performance of teachers in Bungoma County.

In their study on the motivational factors among industrial employees, Hersey and Blanchard as reported by Ajang (2007) ranked the following five factors as the top influential ones (1) full appreciation of work done, (2) feeling of being, (3) sympathetic help regarding personal problems, (4) job security, and (5) good wages/salaries. Kovach in Ajang (2007) carried out a similar study of industrial employees in 1981 and again in 1986 and concluded that by 1981 what workers wanted had changed. The findings showed that interesting work was in the first position and sympathetic help concerning personal problems had dropped to the ninth position. Kovach further reported that by 1986 the ranking had changed even further and the top five ranked motivational factors were: (1) interesting work, (2) full appreciation of work done, (3) feeling of being (recognition), (4) job security and (5) good wages/salary. A survey by Ajang (2007) ranked top five factors that motivate workers as future employees as follows: job satisfaction, promotions/expectations, recognition, good salary, and organizational/management styles.

A lot of empirical studies on employees' motivation have been undertaken in manufacturing industries in developed countries yielding varied results (Raigama, 2010) but little has been underscored in educational institutions. In this study, motivation has been considered as a HR bundle constituting human resource practices

like training, development, compensation, incentives, reward, recognition and promotion. The research of Pascoe et al. (2002) identifies that employee job satisfaction diminishes due to deficiency in recognition and rewarding. In order to gain employees job satisfaction, it is necessary that management of organizations should offer rewards and recognition on good work.

An empirical study was conducted in Pakistan to measure the impact of reward and recognition on job satisfaction and motivation where 220 questionnaires were distributed and filled by employees of different sectors. The results showed that there exists a significant ( $r=0.73$ ,  $p<0.05$ ) relationship between recognition and employee work motivation (Rizwan et al., 2010). An empirical study was conducted by Reena et al. (2009) to examine the impact of reward and recognition programs on employee motivation and satisfaction. A questionnaire was distributed to 80 employees of Unilever and data was analyzed through SPSS version 16. The results showed that there is a statistically significant ( $r=0.92$ ,  $p<0.01$ ) direct and positive relation between recognition and employee work motivation (Rizwan et al., 2010).

Tessema and Soeters (2006) found a significant and positive correlation between promotion practices and perceived employee performance. However, HR outcomes were used as mediating variables. Soharab and Khurram (2011) did a study on the impact of compensation, promotion and performance evaluation practices on the performance of university teachers of Azad Jammu and Kashmir. It was concluded that compensation has strong and positive impact on performance of university teachers. Furthermore; Baloch et al. (2010) did a study about the HRM practices in order to examine their relationship with the perceived performance of employees in private and public sector banks of North-west Frontier Province (NWFP). Compensation, promotion and performance evaluation practices were significantly found to be correlated with employee performance. Banks were encouraged to pay proper attention to these three practices. It should be noted that most of these studies were focused on the association between HR practices and performance in the manufacturing firms but not in the education sector which is a service industry.

A study conducted by Mshila (2013) on the effects of in-service training on the performance of secondary school teachers in Kiambu West District revealed that in-service training has several positive effects on the performance of secondary teachers in Kiambu District and by extension other parts of Kenya. These include: self-development of the teachers, gaining of new skills that enables them perform their tasks better and adequate and timely completion of syllabuses.

Moreover, examination results from Bungoma County have shown poor teacher performance in both Kenya Certificate of Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE) performance in the period of 2002-2012 (see Appendix 1a). This was

the gap the study sought to fill in by focusing on the impact of motivation as HR bundle on the teacher performance of public schools in Bungoma County, Kenya. Therefore, this study sought to test the hypothesis:  $H_0$ : there is no significant impact of motivation on teacher performance of public schools in Bungoma County.

## METHODOLOGY

This study was conducted in Bungoma County which is one of the four Counties that constitute the former Western province of Kenya (see Appendices 3a and 3b) and adopted descriptive and correlational survey designs. The target population consisted of 1,031 public schools and 9,884 teachers and 762 support staff. The sample size of schools in each stratum and the number of respondents were obtained using coefficient of variation (see Appendix 1d) (Nassiuma, 2000). Simple and proportionate random sampling were used to select 100 schools and 100 head teachers, 130 teachers and 75 support staff, a District Education Officer (DEO) and a District Quality Assurance and Standards Officer (DQASO). Primary data was obtained from the two questionnaires, key informant interview schedules and observation checklists. Secondary data on the number of public schools, teachers, support staff and teacher performance in both KCPE and KCSE was obtained through study of available literature and records from the relevant government agencies and other stakeholders like teachers' trade unions. The researcher used research assistants who issued, and picked questionnaires from the respondents. The researcher personally filled the interview schedules and observation checklists (Appendices 2a and 2b).

Research instruments were retested on a sample of 10 respondents who were not used in the final analysis. The questionnaire and interview schedules were used to collect the data. The questionnaire contained information on the background information of the respondents and questions on training, development, compensation, incentives, reward, recognition and promotion. The questions on these variables were based on the five point Likert scale and scored as indicated: Strongly agreed (SA = 5), agree (A = 4), undecided (UD = 3), disagree (D = 2), strongly disagree (SD = 1).

Validity of the research instruments was based on the three overarching forms of validity: content, face and construct validity. Validity was achieved by presenting the instruments to the supervisor and experts in the school of business to evaluate the applicability and appropriateness of the content, clarity and adequacy of construction of the instrument and suggestions made and modified appropriately. To establish the reliability of the study, Cronbach's Alpha Coefficient was computed on training, development, compensation, incentives, reward, recognition and promotion and yielded an alpha of 0.90 (see Appendix 1c). The results of the pilot study revealed that the research instruments were adequate in content, reliable and valid to measure the opinions of the respondents. Data analysis was done at two levels using descriptive statistics and inferential statistics. In descriptive statistics measures of central tendency, frequency tables and percentages were used. Inferential statistics involved the use of analysis of variance (ANOVA), simple and multiple regression analyses.

When granted the research permit from the National Commission for Science, Technology and Innovation (NACOSTI), the researcher liaised with the District Education Officers and human resource departments in Bungoma County in order to collect data. This required clearance from school administration as well as District Education Officers for the researcher to administer data collection instruments and collect the data. Confidentiality was observed throughout the study for respondents who gave personal opinions.

**Table 1.** Preparation of Learners in National Examination and Academic Performance

Reasons	Frequency	Percentage
Excellent	33	14.7
Average	20	8.9
Below	107	47.5
Poor	65	28.9
Total	225	100.0
F-value	p-value	Df
8.0953	0.022	1,8

Data collection is a sensitive issue as it borders on invading people's private lives, ethical consideration are therefore, of paramount importance in research (Mugenda and Mugenda (2003). The researcher ensured that the respondents were made aware of the intended use of the data and that the information obtained was confidential and was not to be disclosed or discussed with any unauthorized persons. Effort was made to ensure that the respondents were protected from any psychological harm during data collection. Punctuality was observed to avoid any inconveniences to the respondents.

## RESULTS

### Background Information on Performance of Teachers in Public Schools

One Way ANOVA conducted between the levels of teacher's preparation of learners in national examination and teacher performance revealed a significant difference ( $p < 0.05$ ), ( $F_{(1, 8)} = 8.0953$ ,  $p\text{-value} = 0.022$ ). This was inferred to mean that the level of teacher's preparation of students in national examinations affected teacher performance in the national examinations. For example, 47.5% of respondents were of the opinion that the preparation of learners in national examinations was below average, 28.9% of respondents indicated preparation was poor, 14.7% excellent, and 8.9% average (see Table 1). This could be attributed to teachers' diverse needs and this meant that teachers spend more time fulfilling their needs than preparing adequately the learners for the national examinations. As echoed by the Need Theory, needs represent an internal energy force that directs behaviour toward actions that permit the satisfaction (Murray, 1938). This need is what drives us to do whatever we do.

Multiple post hoc tests based on the Least Significant Differences (LSD) as given in Table 2 indicate a significant difference ( $p < 0.05$ ) in the mean score indices among the counties except, the teacher performance between Kakamega and Vihiga Counties (for detailed results, see Appendix 1b). The poor teacher performance in Bungoma County could be attributed to very deep cultural heritage with extensive rites of passage like circumcisions, remembrance of the dead which have preoccupied the minds of the people demeaning the importance of

**Table 2.** Multiple-Post Hoc LSD test for County Academic Results in the Four Counties

County	Mean score
Busia	5.29a
Kakamega	5.00b
Vihiga	4.98b
Bungoma	4.79c

Means followed by the same letter are not significantly different from each other at 5% level.

education. The animosity between the Bukusu and the Sabao of Mount Elgon has played a negative role in lowering the academic standards of Bungoma County by hindering freely sharing of information on education. This could also explain the poor academic standards in Mount Elgon District.

### Training and Development and Teacher Performance

The results illustrate that 29.3% of respondents strongly agreed that teachers are taken for refresher courses offered by Strengthening of Mathematics and Sciences in Education (SMASSE) and Kenya Education Management Institute (KEMI) to increase teachers' skills, 16% agreed, 28% of respondents disagreed while 26.7% strongly disagreed. The mean on this variable was rather low ( $M = 2.93$ , on scale from 1 = strongly disagree to 5 = strongly agree), an indication that most teachers do not attend refresher courses offered by SMASSE and KESI (see results in Table 3). This could be true because SMASSE In-Service Training usually targets Mathematics and Science teachers only (JICA, 2004).

The results show that training and development as a HR practice was evident in public schools in Bungoma County and was practised to some extent. Interview guides demonstrate that in-service training of teachers in Kenya and particularly in Bungoma County has been inadequate with attention focused mainly on heads of schools.

### Compensation/Performance Appraisal and Teacher Performance

A Chi Squared goodness of fit test conducted on compensation/incentives and rewards in Table 4, showed a highly significant ( $p < 0.000$ ) association an indication that the responses to the variables of compensation/incentives and rewards were uniform. The results further illustrated that teachers' payment is not pegged on their job performance: (31.6% disagreed, 29.3% strongly

disagreed, 23.6% agreed, 10.7% strongly agreed and 4.9% of respondents were undecided). Diverse views were given concerning whether teachers were appraised at least once a year (37.8% of respondents agreed, 26.7% disagreed, 19.1% strongly disagreed, 9.3% of respondents were undecided while 7.1% of respondents strongly agreed). This had a low mean of 2.87 based on the on scale from 1 = strongly disagree to 5 = strongly agree. The results on whether teachers are provided feedback after performance appraisal showed that 40.9% of the respondents strongly agreed, 19.6% agreed, 19.6% disagreed, 13.8% of respondents strongly disagreed and 6.2% of respondents were undecided.

Similarly, diversified views were given by the respondents on whether head teachers carry out performance appraisal in schools: The findings revealed that (38.7% of respondents were in agreement whereas 22.7% were in disagreement. Seventeen point eight percent (17.8%) of the respondents strongly agreed, 16.4% strongly disagreed and 4.4% were undecided. This had a mean of 3.19. This signified that some teachers were not aware of staff appraisal, how it is done and often the feedback is not given to the appraisees (teachers) to know how they are faring on well and whether the set objectives were achieved. This could translate to lack of proper appraisal guidelines for the teachers. The results also point to the fact that teachers are passive participants in the performance appraisal process.

### Impact of Motivation and Teacher Performance

The study sought to determine the impact of motivation on teacher performance of public schools in Bungoma County. This objective was achieved through the analysis of variance and regression analysis as illustrated in Table 5. Results indicate that training and development had a fairly moderate positive and significant impact on the teacher performance of public secondary schools ( $R^2 = 0.195$ ,  $b = 0.348$ ,  $t\text{-value} = 4.426$ ,  $p\text{-value} = 0.000$ ).  $R^2$  indicates the degree of association between motivation and academic performance. This implies that for every unit increase in motivation, there is a corresponding increase in teacher performance by 19.5%. Also, 19.5% increase in teacher performance is attributed to motivation. The variance of teacher performance significantly explained by motivation as independent variables was 19.5%. Therefore, this meant that  $R^2 = 19.5\%$  motivation did not strongly impact on teacher performance in Bungoma County, an indication that its level of influence on teacher performance was low. Compensation and rewards had a weak positive association on teacher performance of public schools in Bungoma County ( $R^2 = 0.055$ ,  $b = 0.216$ ,  $t\text{-value} = 3.932$ ,  $p\text{-value} = 0.000$ ). On the other hand, promotion had a positive insignificant ( $> 0.005$ ) association on teacher performance of public schools in Bungoma County ( $R^2 = 0.112$ ,  $b = 0.058$ ,  $t\text{-value} = 0.967$ ,  $p > 0.05$ ).

**Table 3.** Training and Development of Teachers in Bungoma County

Training	SA	A	U	D	SD	Mean	X Goodness of Fit Test
Teachers are taken for refresher courses offered by SMASSE and KESI to increase teachers' skills	66(29.3%)	36(16%)		63(28%)	60(26.7%)	2.93	$\chi^2 = 10.040$ , df = 3, p-value = 0.000
Teachers attended workshops/seminars in their subject areas	38(16.9%)	143(63.6%)		36(16%)	8(3.6%)	3.74	$\chi^2 = 188.387$ , df = 3, p-value = 0.000
The ministry of education has made provisions for teachers' training and development through provision of scholarships and study leaves	64(28.4%)	87(38.7%)	7(3.1%)	47(20.9%)	20(8.9%)	3.57	$\chi^2 = 204.533$ , df = 4, p-value = 0.000
Head teachers/principal allow teachers to further their studies to increase their educational levels	77(34.2%)	114(50.7%)	12(5.3%)	14(6.2%)	8(3.6%)	4.06	$\chi^2 = 93.289$ , df = 4, p-value = 0.000

N = 225, SA= strongly agree, A= agree, U= undecided, D= disagree and SD = strongly disagree.

Overall, motivation as a bundle of HR had a marginally positive and significant association with teacher performance of public secondary schools ( $R^2 = 0.120$ ,  $F = 6.67$ ,  $b = 0.169$ ,  $t$ -value = 2.46,  $p$ -value = 0.001). Therefore, the hypothesis which states that there is no significant impact of motivation on performance of public schools in Bungoma County was rejected. The results on the motivation versus teacher performance indicated a marginal positive and significant association with teacher performance of public schools ( $R^2 = 0.120$ ,  $b = 0.169$ ,  $t$ -value = 2.46,  $p$ -value = 0.001).

## DISCUSSIONS

These study findings were consistent with the findings of ILO (2012) that appropriate and relevant employment terms and career development opportunities for teachers are important for attracting and retaining the most qualified, experienced and motivated teachers. As the ILO tripartite constituents have concluded: —universally attainable and quality lifelong learning depends in large part on highly qualified and dedicated teaching, administrative and support staff (ILO, 2000a).

Similarly, Soharab and Khurram (2011) study on motivation of university teachers of Azad Jammu and Kashmir (AJK) observed that compensation and reward have strong and positive impact on performance of university teachers. This study also established that promotion,

compensation and reward were the major elements that influenced the teachers' performance at school. However, promotion practices were found to have insignificant ( $p > 0.05$ ) relationship with the performance of the teachers. The reason for this was that most promotion procedures were vague and not properly followed during promotion of teachers in public secondary schools. The findings from interview guides also confirmed that promotions of teachers from primary schools from job group G to K usually takes 12 years and that one was not guaranteed promotion unless he/she passes Teachers' Proficiency Courses (TPC). For example, the study established that very few teachers in Bungoma County if any are in job group P, yet many have attained masters' degrees. The three schemes of service, that is, non-graduate, graduate and secretariat are a hindrance to teachers' promotion from one job group to another. Moreover, majority of the P1 and P2 teachers are obliged to attain undergraduate degrees before promotion to job group K. Therefore, this meant that for teachers to be promoted they had to enrol for undergraduate programmes that run when schools close (school-based programmes). These programmes are usually very intensive and therefore, the teachers cannot prepare adequately the candidates for the national examinations, resulting to poor performance. Moreover, effective appraisal should be a dynamic interaction process which should result in negotiated goals that are linked to professional development. If the process does not result in the desired

**Table 4.** Staff Appraisal, Compensation, Rewards and Promotion

	SA	A	U	D	SD	Mean	Chi Squared Goodness of Fit Test
<b>Compensation/Incentives and Rewards</b>							
Teachers are paid based on job performance	24(10.7%)	53(23.6%)	11(4.9%)	71(31.6%)	66(29.3%)	2.72	$\chi^2 = 61.733$ , df = 4, p-value = 0.000
Teachers are given incentives after good performance in national examinations	38(16.9%)	143(63.6%)		36(16%)	8(3.6%)	2.35	$\chi^2 = 116.222$ , df = 4, p-value = 0.000
Provision of an effective motivating incentive system is wanting to boost performance of teaching force	49(21.8%)	81(36%)	7(6.2%)	32(14.2%)	49(21.8%)	3.22	$\chi^2 = 54.622$ , df = 4, p-value = 0.000
Reward can influence positively teacher performance	49(21.8%)	82(36%)		3(1.3%)	24(10.7%)	4.29	$\chi^2 = 142.679$ , df = 3, p-value = 0.000
<b>Promotion</b>							
Teachers' merit is the basis for promotion rather than seniority	45(20%)	68(30.2%)	13(5.8%)	36(16%)	63(28%)	2.98	$\chi^2 = 43.511$ , df = 4, p-value = 0.000
Teacher's promotion is based on performance	54(24%)	59(26.2%)	20(8.9%)	47(20.9%)	45(20%)	3.13	$\chi^2 = 20.133$ , df = 4, p-value = 0.000
Promotion of teachers is based on working experience	12(12%)	64(28.4%)	15(6.7%)	55(24.4%)	56(24.9%)	2.80	$\chi^2 = 41.318$ , df = 4, p-value = 0.000
<b>Staff Appraisal</b>							
Teachers are appraised at least once a year	16(7.1%)	85(37.8%)	21(9.3%)	60(26.7%)	43(19.1%)	2.87	$\chi^2 = 72.133$ , df = 4, p-value = 0.000
Teachers are provided feedback after performance appraisal	44(19.6%)	92(40.9%)	14(6.2%)	44(19.6%)	31(13.8%)	3.33	$\chi^2 = 74.844$ , df = 4, p-value = 0.000
Head teachers carry out performance appraisal of their staff	40(17.8%)	87(38.7%)	10(4.4%)	51(22.7%)	37(16.4%)	3.19	$\chi^2 = 69.20$ , df = 4, p-value = 0.000

N = 225, SA= strongly agree, A= agree, U= undecided, D= disagree and SD = strongly disagree.

**Table 5.** Simple Regression Analysis on Impact of Motivation on Teacher performance of Public Schools

Model 1	Adjusted R <sup>2</sup>	Regression coefficient, b	t-value	p-value/Sig.
Training & development and performance (school mean scores)	0.195	0.348	4.426	0.000 (s)
Compensation & rewards and performance (school mean scores)	0.055	0.216	3.932	0.000 (s)
Promotion and (school mean scores)	0.112	0.058	0.967	≥0.05 (ns)
Overall	0.120	0.169	2.46	0.001 (s)

N = 225; s-significant with p-value ≤0.05 and ns-not significant with p-value ≥0.05.



purpose it becomes a high stakes activity which is by being threatening and stressful.

Chandrasekar (2011) confirms the findings of this study by observing that employee performance fundamentally depends on many factors like performance appraisals, employee motivation, employee satisfaction, compensation, training and development, job security, organizational structure and others. Employee motivation is one of the policies of managers to increase effectual job management amongst employees in organizations. A motivated employee is responsive of the definite goals and objectives he/she must achieve, thus he/she directs the efforts in that direction. Furthermore, Khan et al. (2010) said that, getting employees to do their best work even in strenuous circumstances, is one of the employees most stable and greasy challenges which can be made possible through motivating them. This therefore, in the education sector particularly in Bungoma County can be achieved through provision of physical facilities and instructional materials and housing facilities.

## CONCLUSIONS

Motivation as a HR bundle had a marginal positive and significant association with teacher performance of public secondary schools in Bungoma County. Results indicate that training and development of teachers had a fairly moderate positive and significant impact on the teacher performance of public secondary schools. This meant that training and development did not strongly impact teacher performance in Bungoma County; its level of influence on teacher performance was low. Teachers' compensation and rewards had a weak positive association on teacher performance while promotion had a positive insignificant association on teacher performance of public schools in Bungoma County. Overall, motivation as a bundle of HR had a marginally positive and significant association with teacher performance of public secondary schools.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

## RECOMMENDATIONS

The school management and the Ministry of Education should ensure that HR practices like training and development, staff appraisal, compensation, rewards and promotion of are fully implemented in schools since they lead to positive academic performance. The study proposes that the Government of Kenya and the Ministry of Education should ensure that teachers' salaries and benefits compare favourably with salaries paid in other occupations requiring similar or equivalent qualifications,

skills and responsibilities. Furthermore, there is need for a reasonable living standard for teachers and their families, provision of teachers with the means to enhance their professional qualifications by investing in further education and the pursuit of cultural activities and take account of the higher level qualifications and experience required by certain posts within teaching/education.

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## APPENDICES

**APPENDIX 1a.** COMPARISON OF TEACHER PERFORMANCE OF BUNGOMA COUNTY WITH OTHER COUNTIES IN THE FORMER WESTERN PROVINCE (2002 – 2012)

YEAR	BUNGOMA COUNTY MEAN SCORES	KAKAMEGA COUNTY MEAN SCORES	VIHIGA COUNTY MEAN SCORES	BUSIA COUNTY MEAN SCORES
2002	4.221	4.504	4.458	5.167
2003	4.628	4.838	4.612	5.228
2004	4.796	4.948	4.829	5.663
2005	5.210	5.329	5.303	5.802
2006	4.588	4.812	4.876	5.172
2007	4.772	5.213	5.261	5.604
2008	4.457	4.765	4.675	4.715
2009	4.622	4.863	4.768	4.648
2010	5.318	5.389	5.511	5.332
2011	5.316	5.383	5.534	5.525
2012	3.816	3.969	4.097	4.016
Mean Average	4.793	5.004	4.983	5.286

Source: Mean Scores Derived from KNEC-2002-2012  
Maximum mean score/standard mean score: 12.000

**APPENDIX 1b.** ONE-WAY ANOVA MULTIPLE-POST HOC COUNTY ACADEMIC COMPARISON RESULTS IN THE FOUR COUNTIES IN THE FORMER WESTERN PROVINCE

County	Mean	Honestly Significant Difference (HSD)	Tukey	LSD	Bonferroni	Sidak
M1	4.793	M1, M2 = -1.290	>HSD value (s)	p = 0.058 (s)	p = 0.038 (s)	p = 0.095 (s)
M2	5.004	M1, M3 = -1.162	>HSD value (s)	p = 0.025 (s)	p = 0.025 (s)	p = 0.064 (s)
M3	4.983	M1, M4 = -3.014	>HSD value (s)	p = 0.034 (s)	p = 0.017 (s)	p = 0.042 (s)
M4	5.286	M2, M3 = 0.128	>HSD value (ns)	p = 0.560 (ns)	p = 0.570 (ns)	p = 0.574 (ns)
		M2, M4 = -1.724	>HSD value (s)	p = 0.048 (s)	p = 0.0160 (s)	p = 0.01 (s)
		M3, M4 = -1.853	>HSD value (s)	p = 0.024 (s)	p = 0.0230 (s)	p = 0.017 (s)

M1= Bungoma, M2 = Kakamega, M3 =Vihiga and M4 = Busia

s= significant (p<0.05), two groups differ; ns = not significant (p>0.05), two groups do not differ

For Turkey, if the difference is larger than the HSD value (0.01284), then the difference is significant

**APPENDIX 1c.** Reliability Coefficients of the Research Variables

<b>Variables</b>	<b>Number of Items</b>	<b>Reliability, <math>\alpha</math></b>
School performance in KCSE and KCPE	2	0.91
Motivation	15	0.90
Governance	5	0.88
Working environment	7	0.92
Average, $\alpha$	29	0.9025

Source: Researchers' Computation, 2013

**APPENDIX 1d:** Nassiuma's Coefficient of Variation

$$S = \frac{N(Cv)^2}{(Cv)^2 + (N - 1)e^2}$$

**APPENDIX 2a:** INTERVIEW SCHEDULE FOR THE DEOs and DQASOs

Introduction: Good morning or afternoon sir/madam. Thank you for allowing me to interview you in regard to HR practices and their Impact on the Performance of Public Schools in Bungoma County, Kenya. I would like to assure you that I will stick to all ethical codes of conduct with regard to conducting research as stated in my introduction letter will be adhered to.

The Interview Questions:

What are some of the factors affecting teacher performance in the County?

With reference to the factors in question 1, how have these factors affected morale, motivation, satisfaction and teacher performance in the County?

In your opinion which factors affect the teaching force most in the performance of their duties? Kindly arrange them in order of merit from the worst to the least.

Which strategic options will help in improving the performance of public schools in Bungoma County?

Conclusion: Thank you for your time, your responses to the questions will indeed contribute a lot to my research work.

**APPENDIX 2b:** INTERVIEW SCHEDULE FOR THE SUPPORT STAFF

Introduction: Good morning or afternoon sir/madam. Thank you for allowing me to interview you in regard to HR practices and their Impact on the Performance of Public Schools in Bungoma County, Kenya. I would like to assure you that I will stick to all ethical codes of conduct with regard to conducting research as stated in my introduction letter.

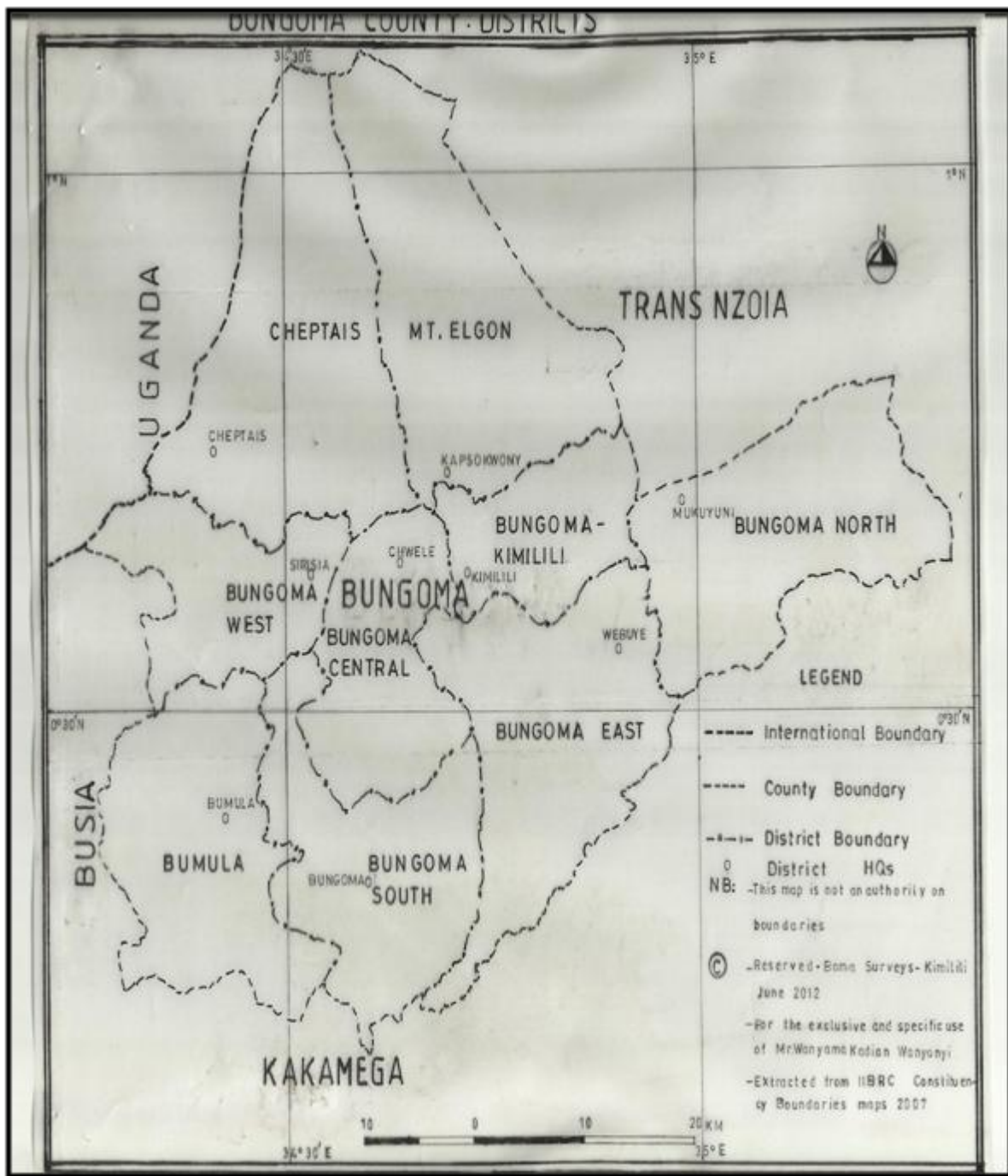
The Interview Questions:

What are some of the factors affecting the performance of your duties in their school?

Which factors affect you most in the performance of your duties in school?

What do you think should be the solutions to these challenges so as to improve the teacher performance of the school?

**Conclusion:** Thank you for your time, your responses to the questions will indeed contribute a lot to my research work.



**APPENDIX 3a:** A Map of Bungoma County Showing Nine Administration Districts



**APPENDIX 3b:** A MAP OF THE FORMER WESTERN PROVINCE SHOWING ITS FOUR COUNTIES

*Full Length Research Paper*

## **About the relationship between health expenditure and GDP: more evidence**

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**In this paper, the relationship between Health Care Expenditure (HCE) and Gross Domestic Product (GDP) in different developed countries with different health care systems from 1960 to 2010 were analyzed. For this purpose, unit root test and cointegration techniques were used. We showed not only the trajectory of these variables over time but also other factors associated with them, as life expectancy at birth, total expenditure on health, gross domestic product, density of general care physicians and population composition by age. The results of this research showed that these variables were not always integrated with the same order although they showed great variation across countries. We could confirm HCE varies significantly over time and across countries although there exist a number of non-income determinants which could explain this variation.**

**Key words.** Health expenditure, GDP, unit root, cointegration.

**JEL Classification Codes:** I18, H51

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### **INTRODUCTION**

During the last years, health care management has become an important issue in modern societies. Thus, it is one of the most dynamic and growing fields of interest not only for researchers but also for policy makers. In 2000, all 193 United Nations member States agreed to achieve the Millennium Development Goals (MDGs) by the year 2015. The goals are: Eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality rates; improving maternal health; combating HIV/AIDS, malaria and other diseases; ensuring environmental sustainability and developing a global partnership for development. In particular, health is

considered a key aspect to development and a pre-condition for an indicator of progress in sustainable development.

Empirical evidence in health economics is largely based on time series. In this sense, numerous empirical studies are focused on the relationship between Health Care Expenditure (HCE) and Gross Domestic Product (GDP). Some studies are focused on the stationary property of health expenditures while others are focused on the determinants of health expenditures. Also, a considerable amount of research focused on the relationship between health and economic growth exist. However, it has been found that most of the observed variation in HCE could

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be explained by changes in Gross Domestic Product (GDP).

For instance, Narayan and Narayan (2008) examine the evidence for common trends and common cycles among different countries over the period 1960-2003. They performed unit root tests on per capita health expenditures for each of these countries in order to establish the integration property of the data series and concluded that transitory shocks are more important in explaining per capita health expenditures in the UK, Japan and Switzerland while permanent shocks dominate variations in per capita health expenditures in the USA and Canada over short horizons. In a similar way, Wang and Rettenmaier (2007) investigate non-stationarity and co-integration of health care expenditures and gross state products utilizing a panel data set of 50 US states. Their evidence suggests that both series can be modelled as non-stationary and can form a co-integrating relationship. Also, Moscone and Tonetti (2010) investigate the non-stationarity and co-integration properties of health care expenditure and personal disposable income using a panel of 49 US States followed for more than 25 years.

Gerdtham and Löthgren (2000) examine the stationarity and the co-integration of health expenditure and GDP for a sample of 21 OECD countries using data for the period 1960-1997. Their results indicate that health expenditure and GDP are non-stationary and co-integrated. Also, they test for non-stationarity using country-by-country and panel ADF (Augmented Dickey-Fuller) tests.

Hansen and King (1996) suggest that for most OECD countries, there is no long-term relationship between HCE, GDP and a selection of non-income variables or between HCE and GDP alone. These authors suggest that the strong relationship obtained by others may be spurious. Their results are based on 20 OECD member nations covering the period 1960 to 1987. However, Clemente et al. (2004) study the stability of health care expenditure functions in a sample of OECD countries and conclude that there is a long-term relationship between HCE and GDP.

Tang and Ch'ng (2011) investigate the health-income relationship for the ASEAN-5 economies. They conclude that health expenditure and income are co-integrated in the case of Indonesia, Singapore and Thailand. However, they found that these variables are not moving together in the long term in the case of Malaysia and Philippines. So there exist important differences by country.

Also, health care financing is an important challenge in developing countries. In fact, to help improve the policy making process, we should take into consideration the following points (Ile and Garr, 2012): The need to promote a better understanding of the policy making process to enable politicians, economists and health managers work to understand the complexities of the factors related with population health.

To summarize, we can confirm HCE varies significantly

over time and across countries although there exist a number of non-income determinants which could explain this variation such as the age structure of the population (Culyer, 1988), the share of young and old people (Hitiris and Posnett, 1992), the extent to which health care expenditure is financed by the government (Leu, 1986), epidemiological needs (Lu et al. 2010) and health system characteristics (Gerdtham et al., 1992).

This paper is focused on the relationship between health and Gross Domestic Product in different developed countries with different health care systems. In particular, these countries are members of the Organization for Economic Cooperation and Development and they are included in the Asia and Pacific Area group. The results reported suggest that all the variables are not integrated with the same order, so cointegration techniques are not always adequate. The rest of the paper is organized as follows: Section 2 describes the econometric methodology, data description and results are shown in Section 3 and finally, the conclusions of the paper are presented in Section 4.

## THEORETICAL FRAMEWORK

During the last decades, three major developments in statistics have been widely discussed; vector autoregressions (VARs), unit roots and cointegration. Thus, one of the most important points when dealing with several time series is to consider the possible interdependence between them. In this sense, we can consider a time series as a collection of random variables ordered in time. Therefore, a time series is said to be stationary if statistical properties do not change over time. More formally, from a theoretical point of view a time series is a collection of random variables  $X_t$  ordered in time. A time series is said to be strictly stationary (Maddala, 1992) if the joint distribution of any set of  $n$  observations  $X(t_1), X(t_2), \dots, X(t_n)$  is the same as the joint distribution of  $X(t_1+k), X(t_2+k), X(t_n+k)$  for all  $n$  and  $k$ . Substituting  $n=1$ , we get  $\mu(t)=\mu$  a constant and  $\sigma^2(t)=\sigma^2$  a constant for all  $t$ .

It implies that mean and the variance of the stochastic process do not depend on  $t$  and the autocovariance between  $Y_t$  and  $Y_{t+k}$  only depends on the lag  $k$  (Chatfield, 2003). So a stationary series would contain no trend or seasonal variation. Furthermore, a time series is said to be integrated of order  $d$ , denoted by  $I(d)$ , if you have to differentiate it  $d$  times to obtain a stationary process. Consequently, a time series  $Y_t$  is integrated of order 1,  $I(1)$ , if  $Y_t$  is not stationary but the first difference,  $Y_t - Y_{t-1}$ , is stationary and invertible (Greene, 2003). The relevance of this result is that unless the variables are integrated to the same order, the following equation does not make sense:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \varepsilon_t$$



**Table 1.** Variable definitions

Name	Definition
LE_FEMALE	Life expectancy females at birth - Years
LE_MALE	Life expectancy males at birth - Years
EXPENDITURE	Total expenditure on health - /capita, US\$ PPP
GDP	Gross domestic product - /capita, US\$ PPP
P14	Population: 0-14 years - % total population
P65	Population: 65 and over - % total population
G_PRACTITIONER	General practitioner - Density /1000 pop. (HC)

The order of integration of a series is obtained by the application of a set of tests, usually known as tests for unit roots. The most common test in economic literature for unit roots are Augmented Dickey and Fuller (ADF) unit root test (Dickey and Fuller, 1979) and Phillips-Perron (1988). The ADF test involves estimating the following regression:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{i=1}^k \delta_i \Delta y_{t-1} + \varepsilon_t,$$

which includes a trend  $t$ , a constant term  $\alpha$ , as well as lagged versions of the series, and where  $y_t$  is the variable of interest. The null hypothesis for this test is  $H_0: \hat{\gamma} = 0$ .

On the other hand, Phillips-Perron test (PP) is a unit root test used to test the null hypothesis that a time series is integrated of order 1. PP is a non-parametric test based on asymptotic theory which works well in large samples. This test estimates autocorrelations in the error process, rather than white noise errors. For this reason, this test is more generally applicable. Davidson and MacKinnon (2006) conclude that Phillips-Perron test could perform worse in finite samples than the ADF test.

However, from a statistical point of view, we are very interested in analyzing not only the short-run dynamics but also long-run equilibrium. Cointegration techniques provide powerful tools to test if there exists a statistically significant connection between two or more variables. The concept of cointegration was introduced by Granger (1981). In the last decades, cointegration theory has generated very much interest among economists (Johansen, 1991). From a theoretical point of view, two variables  $x_t$  and  $y_t$  are said to be cointegrated if there exists a parameter  $\alpha$  such that  $y_t = \alpha x_t + u_t$  is a stationary process (Engle and Granger, 1987). So, it is necessary that all the variables have the same integration order. Otherwise, the variables would not have a direct causal connection.

## METHODOLOGY AND RESULTS

The data used in this study were obtained from the

Organization for Economic Co-operation and Development (OECD) Health Data (OECD, 2012). This data set contains annual data from 1960 to 2010 about health status, health care resources, expenditure on health, social protection and other economic and demographic references for OECD countries. This information allows us to compare the results and the main statistics about health for different countries. In this study we have used information available from 1960 to 2009 about total expenditure on health (EXPENDITURE) and Gross domestic product (GDP), both of them, per capita purchasing power parity. As defined by the World Bank, total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation.

We have also included two variables for life expectancy at birth (in years) by gender, LE\_FEMALE and LE\_MALE. In addition, we have included in this analysis the percentage of population which is fourteen years and under (P14) and the percentage of population sixty five years and over (P65). Finally, we have included a variable (G\_PRACTITIONER) to take into account, the density per thousand of general care physicians. The definition of each variable used is given in Table 1.

The countries analyzed in this paper are Australia, Canada, Chile, Japan, Korea, Mexico, New Zealand and United States, which are the Asia and Pacific Area group. All of them are members of the Organisation for Economic Co-operation and Development and represent different health care systems. The results of ADF and PP unit root tests reported in Table 2 suggest that all the variables were not integrated of order one. In fact, the order of integration for each variable and country was not the same. Variables were either  $I(2)$ ,  $I(1)$  or  $I(0)$  and results also differed by country so it was not possible to apply cointegration techniques in most of the cases. It implied that you had to differentiate the corresponding series 2, 1 or 0 times, respectively, to obtain a stationary series. In most of the countries considered (Australia, Canada,

**Table 2.** Results of ADF and PP unit root test

Variables	ADF	PP	Order of Integration	Variables	ADF	PP	Order of Integration
Australia:				Korea:			
LEFEMALE	-9.3409	-9.0742	I(1)	LEFEMALE	-4.4934	-4.6078	I(1)
LEMALE	-7.1117	-7.1062	I(1)	LEMALE	-2.6532	-7.9696	I(2)*
EXPENDITURE	-13.1344	-28.8057	I(2)	EXPENDITURE	-5.467	-6.3816	I(2)
GDP	-3.1078	-2.9777	I(1)	GDP	-3.7245	-3.6494	I(1)
P14	-3.5872	-3.7323	I(1)	P14	-0.3211	-3.0669	I(1)
P65	-3.5778	-3.5998	I(1)	P65	-15.4254	-27.572	I(2)
G_ PRACTITIONER	-5.9912	-7.177	I(1)	G_ PRACTITIONER	.	.	.
Canada:				Mexico:			
LEFEMALE	-4.6604	-5.6844	I(1)	LEFEMALE	-3.0723	-4.414	I(0)
LEMALE	.	-5.7325	I(1)	LEMALE	-8.6112	-8.5887	I(1)
EXPENDITURE	-7.3013	-7.6633	I(2)	EXPENDITURE	-3.8582	-5.329	I(2)
GDP	-2.8833	-2.7736	I(1)	GDP	-4.0682	-4.0085	I(1)
P14	-4.5193	-2.6385	I(1)*	P14	-12.8265	-14.4203	I(2)
P65	-3.4095	-3.3349	I(1)	P65	-6.5464	-6.5461	I(1)
G_ PRACTITIONER	-3.2841	-3.2915	I(1)	G_ PRACTITIONER	-5.5031	-6.0215	I(1)
Chile:				New Zealand:			
LEFEMALE	-3.843	-2.8834	I(0)	LEFEMALE	-3.8109	-3.7533	I(1)
LEMALE	-4.0192	-2.8447	I(2)*	LEMALE	-12.7457	-12.7457	I(2)
EXPENDITURE	-3.0937	-3.0979	I(2)	EXPENDITURE	-7.9892	-3.7071	I(2)*
GDP	-1.9224	-2.7114	**	GDP	-4.0591	-4.0408	I(1)
P14	-2.6187	-5.9024	I(2)*	P14	-7.1643	-7.156	I(2)
P65	-4.4893	-4.7158	I(2)*	P65	-3.901	-3.7884	I(1)
G_ PRACTITIONER	.	.	.	G_ PRACTITIONER	-4.4116	-4.4104	I(1)
Japan:				United States:			
LEFEMALE	-3.8082	-6.6778	I(0)	LEFEMALE	-7.4584	-7.4055	I(1)
LEMALE	-3.5078	-5.2568	I(0)	LEMALE	-6.2116	-6.2525	I(1)
EXPENDITURE	-6.6852	-15.5749	I(2)	EXPENDITURE	-3.7834	-3.7179	I(2)
GDP	-3.3204	-3.241	I(1)	GDP	-2.6859	-9.045	I(2)*
P14	-8.9385	-8.6176	I(2)	P14	-4.1889	-9.9766	I(2)*
P65	-8.6997	-31.9983	I(2)	P65	-8.6609	-3.6651	I(2)*
G_ PRACTITIONER	.	.	.	G_ PRACTITIONER	-5.1504	-5.1267	I(1)

\* The order of integration is different according to the test used

\*\* The order of integration is more than 2 with both tests

Note: P14 is defined as Population: 0-14 years - % total population and P65 as Population: 65 and over - % total population

All the variables are statistically significant at the conventional level (that is, 1, 5 and 10%)

Source: Computed from OECD (2012).

Japan, Korea, Mexico, New Zealand, United States), HCE was integrated of order 2. However, we found important differences in other variables. For instance GDP was integrated of order 2 for United States while it was integrated of order 1 for Australia, Canada, Japan, Korea, Mexico and New Zealand. Also there existed differences when we considered other variables as life expectancy at

birth, density of general care physicians and population composition by age.

## CONCLUSIONS

This study investigated the relationship between health

expenditure, life expectancy, gross domestic product, population ageing and general practitioners. In fact, the long run relationship was not always guaranteed. Using data from the OECD, we have tested our hypothesis and we could confirm that these variables were not integrated with the same order, so the causality effect, from a statistical point of view, was not so clear because it depends, among other factors, on the variable and country considered. The results showed that health expenditure and income were not always cointegrated. Furthermore, there were many factors such as population ageing, life expectancy and number of general practitioners which should be taken into consideration. In this way, this study has important policy implications: Health indicators must be described and observed, however, we need to understand the economic mechanisms, not only income, which could explain them.

### Conflict of Interests

The author(s) have not declared any conflict of interests.

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