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Does the Kitchen Location Matter? Comparing PM in buildings in Irasa Community of Ado Ekiti, Nigeria

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Abstract

Predominate cooking fuel in majority of developing countries continues to be biomass fuel (agricultural wastes, wood, charcoal, sawdust, wood chip). In most cases, cooking is done on open fires and the incomplete combustion of the fuel during this process releases harmful pollutants into the atmosphere. Exposure to by-products of cooking fuels is a major global health concern and the altering of the cooking environment is not enough to improve air quality in developing countries. In peri-urban areas of Ado Ekiti, Nigeria, particulate matter levels were measured in buildings of householders; these comprised of nine indoor and nine outdoor kitchen locations. $PM_{2.5}$ was monitored continuously for seven days at each building for nine weeks using the UCB monitor. Average 24 hour mean of $PM_{2.5}$ levels for indoor kitchen location ranged between 48 µg/m^3 and 648 µg/m^3, while it was between 42 µg/m^3 and 275 µg/m^3 for outdoor kitchen locations. Households' survey during cooking activities show that smoke infiltrated into buildings through eaves. The wafting around of the smoke and overnight retaining of fire in the hearth further compromised building air quality, and made the WHO daily average of 25 µg/m^3 for $PM_{2.5}$ to be exceeded. There is a wide gap between guidelines and the real air quality levels in buildings regardless of the kitchen location. Therefore, measures at reducing indoor air pollution should not only focus on cooking fuel for indoor kitchens, but all other kitchen types and locations must be considered as well.

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Introduction

Households subsisting on biomass fuels would continue to be on the increase and according to OECD/IEA (2011) over 2.6 billion people by 2030 would still be relying on biomass fuels for domestic energy. With high number of people still and/or would be dependent on biomass fuels in developing countries, the by-product of indoor air pollution would continue to diminish the quality of life in these areas (World Energy Assessment, 2000). With the short and long term adverse health impact of exposure to biomass fuel smoke on end-user, there is growing international concern to accessing clean energy.

The burden of indoor air pollution are mostly felt in developing countries where households subsist on biomass fuels (agricultural wastes, wood, charcoal, sawdust, wood chip) for domestic activities (Bruce *et al*., 2013). The use of biomass fuels to meet domestic energy needs in developing countries has been contributing to high levels of indoor pollution. These widely used household fuels by more than 80% of rural households in Sub-Saharan Africa largely remains an important source of exposure to particulates (UNDP, 2009). The inefficient burning of these fuels over open fires produces high emissions which include but not limited to carbon monoxide (CO), polycyclic aromatic hydrocarbons (PAHs), sulphur dioxide (SO_2) and particulate matter (PM), aldehydes, chlorinated dioxins (Black *et al*., 2011; Kim *et al*., 2011; Smith, 2000).

Often, PM_{10} is used as an indicator for indoor air pollution in developing countries, but $PM_{2.5}$ has been found to have great impact on the respiratory systems and the body cannot completely remove this toxin form the human body (Sanbata *et al*., 2014). Households using open fires have found to have levels as high as, 3542 µg/m^3 in Pakistan (Amanat *et al*., 2015), 5000 µg/m^3 in Guatemalan villages (Neaher and Smith, 2000), above 8000 µg/m^3 in Nepal (Lahani, 2011). In Zimbabwe a value of 2000 µg/m^3 was recorded while in Kenya, the levels were between 300 – 15000 µg/m^3 (Ezzati and Kammen, 2001). With the series of studies carried out in developing countries (Li *et al*., 2016; Ezzati, 2008; Balakrishnan *et al*., 2002), the recorded 24-hour level for $PM_{2.5}$ showed that the expected WHO guidelines of 50 µg/m^3 for buildings were far from being attained.

With a high percentage (53 percent) of the Nigerian population (estimated at over 145 million people) living in rural areas, the unsustainable use of wood fuel is likely to continue as long as infrastructural investment in clean energy technologies is not put in place. Although the country is estimated to have 80 million cubic metres per year of potential wood fuel reserve (International Food Policy Research Institute, 2010), without the provision of strategies for the sustainable use of this resource, it will result in diminishing supplies of fuel wood.

This study therefore presents results from the measurements of indoor air pollution in Irasa community of Ado Ekiti, Nigeria. $PM_{2.5}$ concentrations measured because of the associated health impact of this particulate matter.

Material and methods

1.1   Study households
The study was carried out at Irasa community, a peri-urban settlement in Ado Ekiti, Nigeria (7^0 40' North and 5^0 16' East) between February and May 2011 (wet season). Temperatures fluctuating between latitude 23' and 40' were measured during the study period.

Householders comprised mostly of farmers, living in a single rooms within the building with narrow alley made of mud bricks and corrugated iron sheets, and with majority of the buildings having eaves. Wood fuels were relied upon for cooking, which were usually gathered freely from nearby forest and farmlands. Usually, householders keep wood stocks especially during wet season as wood fuel cannot be gathered daily. Kitchens were located indoors, in open spaces and using external walls of building (Figure 1). The open space kitchens were located in close proximity to buildings and this allowed smoke to penetrate into buildings and neighbours buildings as well. In selecting buildings for the $PM_{2.5}$ measurements, the type of kitchen location determined participant households' eligibility in the study.

1.2   Data collection
In the study site, measurements of $PM_{2.5}$ concentrations were taken in selected households representing the different housing conditions in the area. Using a structured questionnaires, basic household characteristics information on kitchen types (indoors, open space and exterior wall of the building), primary cooking and lighting fuel type, building materials type, and presence of eaves were collected. The study focused on measuring particulate matter since it is a key indicator of pollutant for health effects of combustion products (Zhou *et al*., 2006).

Households with kitchen types in Figure 1 were considered for the sampling. The convenience sampling method was used in selecting participating households because of their willingness to participate in the study and to further ensure that basic household characteristics were included. On a weekly basis two houses were targeted so that measurements can be made for indoor and outdoor[1] kitchen locations (Figure 1). 18 households in Irasa community were selected for sampling. Prior to householders' recruitment, permission was sought from the community leader. For the participating households, the study protocol was explained to them and they were assured of no health-related side effects of mounting measuring equipment in their buildings.

The University of California, Berkeley (UCB) monitors specifically developed for measuring indoor air pollution in developing countries were used in measuring $PM_{2.5}$ concentrations in buildings. The UCB monitor using photoelectric methods measures particulate matter of a size similar to respirable dust and logs the concentrations each minute (Edwards *et al*., 2006). UCB monitor as shown in Figure 1, were placed in buildings to obtain daily air pollution estimates for a week. The continuous seven-day monitoring was undertaken to capture the average daily 24 h measurement of $PM_{2.5}$ and to determine the consistency in the distribution of air quality levels for all the

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[1] For this study outdoor kitchen referred to open space and exterior wall of the building.

days. Two monitors were used during the study to obtain particulate matter levels in buildings. Each monitor measured $PM_{2.5}$ levels within buildings for 9 indoor and 9 outdoor kitchen types (Figure 1).

The monitors were placed 125cm above the floor and 150cm away from the door and windows in measuring $PM_{2.5}$ levels in the buildings. Prior to use, the UCB monitors were calibrated before shipment and pre-tested at Nottingham University's School of Geography laboratory.

The photoelectric chamber of the UCB monitors was cleaned weekly after use with isopropyl alcohol. Ziploc bags were used to zero the monitor before each use, and zeroing of monitors was done 30 minutes before placing them in the buildings. After retrieving the monitors from the buildings after each measurement, they were placed inside the Ziploc bag for post-sampling zeroing for 20 minutes before downloading the data. The time series data measured at 24 h interval was downloaded using the UCB Browser 2.5 software. Regular checks were made in homes to ensure monitors were not tampered with and locations with observed anomalies were recorded.

Microsoft Excel 2010 was used in calculating the average daily and weekly levels of $PM_{2.5}$ from the data uploaded from the UCB monitors, and mass concentrations presented in $\mu g/m^3$.

Figure 1: Kitchen types and $PM_{2.5}$ measurements at Irasa community
A: indoor kitchen; B: external wall building kitchen C: open space kitchen; D: UCB monitor

Results

The 18 households recruited for the study showed that they all used mud and corrugated iron sheets in constructing their buildings. Of the 18 households sampled, 7 each of indoor and outdoor kitchens users had eaves in their buildings. Amongst outdoor kitchen users, 4 used open space and 5 households attached kitchen to the external wall building. The major types of fuel used were wood fuel among 15 households (83%) and the remaining 3 (17%) households used kerosene for cooking. 10 households among the wood fuel users light the wood with kerosene, this generates smoke which disperses within indoor space and wind further forces the smoke back into buildings from outdoor kitchens.

Houses with indoor kitchen at Irasa community usually do not have closing door at the main building entrance and exit (Figure 1: A), while open space kitchen are located at about 5 meters away from the building. Unlike households cooking indoors, buildings with kitchens attached to building external walls have doors. Cooking activities and times take place almost at the same period in the community which usually starts around 5am for breakfast preparation and 6pm for dinner.

In order to better describe daily variability of exposure to indoor air pollution, continuous weekly sampling was carried out in homes. Particulate matter concentrations were analysed using two averaging periods: 24 h average and weekly average.

The summary of $PM_{2.5}$ concentrations for each type of kitchen is presented in Table 1. One household result using outdoor kitchen (HH7) was excluded because the monitor was tampered with midway of measurement. In households that used indoor kitchen, the 24 h mean $PM_{2.5}$ concentrations ranges between 48 µg/m^3 and 648 µg/m^3. For households using outdoor kitchens, the observed particulate matter concentration is between 42 µg/m^3 and 275 µg/m^3. The results show that there are differences in particulate matter concentration within buildings of the different types of kitchens in the community.

With regards to outdoor kitchens, $PM_{2.5}$ concentration dropped in households using the open space (HH3, HH4, HH8, and HH9), while the particulate matter concentrations remained high in kitchens attached to external building walls and indoor kitchens.

The weekly measured $PM_{2.5}$ in buildings with indoor kitchen was between 62 µg/m^3 (SD=110) and 229 µg/m^3 (SD=1234) (Table 2). In households where cooking take place outdoors, $PM_{2.5}$ concentration ranges between 34 µg/m^3 (SD=231) and 169 µg/m^3 (SD=526), which is nearly half the concentrations from indoor kitchen. The standard deviations for all the different kitchen locations was high, indicating that on the average there are significant variations in the variables. However, the lower mean values in comparison with standard deviation shows the relatively widespread of the values around their means. Particulate matter levels reached a maximum high of 31575 µg/m^3 for indoor kitchens and 22602 µg/m^3 in buildings with outdoor kitchens. In all of the buildings particulate matter concentrations were high regardless of the kitchen type used for cooking activities in the community.

Table 1: Average 24 h PM$_{2.5}$ levels in buildings

24 h daily mean level of PM$_{2.5}$ (μg/m^3) for buildings with indoor (outdoor) kitchens

ID	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
HH1	107 (275)	109 (168)	103 (103)	136 (211)	127 (140)	126 (134)	136 (154)
HH2	648 (87)	110 (80)	106 (152)	120 (132)	100 (95)	109 (101)	118 (98)
HH3	73 (78)	77 (60)	96 (61)	104 (65)	77 (66)	133 (101)	NR
HH4	97 (72)	164 (45)	86 (47)	226 (91)	171 (51)	103 (65)	103 (42)
HH5	165 (159)	232 (104)	171 (62)	161 (60)	152 (208)	144 (130)	71 (91)
HH6	133 (188)	185 (129)	100 (104)	114 (110)	140 (111)	139 (119)	111 (95)
HH7*	539	207	53	541	48	149	74
HH8	63 (130)	60 (60)	60 (65)	59 (66)	62 (77)	69 (71)	63 (70)
HH9	132 (189)	83 (88)	60 (88)	61 (81)	70 (66)	62 (75)	68 (94)

HH: household; NR: no recordings; *only indoor PM$_{2,5}$ level presented

Table 2: Weekly levels of PM$_{2.5}$

Average weekly level of PM$_{2.5}$ (μg/m^3) for buildings with indoor (outdoor) kitchens

ID	Mean	Maximum	St. dev.	95%
HH1	120 (169)	4841 (22602)	211 (526)	438 (455)
HH2	188 (106)	6125 (7341)	532 (260)	458 (271)
HH3	93 (34)	16255 (3294)	231 (78)	223 (103)
HH4	135 (59)	31575 (2977)	693 (107)	354 (153)
HH5	172 (116)	23612 (6149)	822 (370)	414 (269)
HH6	131 (122)	14633 (10433)	460 (379)	351 (356)
HH7*	229	25603	1234	365
HH8	62 (76)	2861 (10122)	110 (286)	48 (137)
HH9	77 (99)	9211 (11801)	133 (434)	295 (200)

*only indoor PM$_{2,5}$ level presented

Discussions

For the households sampled, wood fuel are mostly used for cooking activities, while a handful used kerosene. The result of the observed average daily and weekly indoor air quality in buildings using different locations for cooking activities at Irasa community indicated that particulate matter ranges between 42 μg/m^3 and 648 μg/m^3 (indoor kitchen), and 34 μg/m^3 and 229 μg/m^3 (outdoor kitchen) respectively. The reduction in PM$_{2.5}$ concentrations in some homes were associated reduced cooking times during the week measurement because they were away from home. Although, at one location equipment failure was recorded due to removal of the battery, nonetheless, particulate matter concentrations were consistently high in homes.

Findings from this study have shown consistency with other studies that kitchen location, fuel characteristics, building structure, and ventilation are some of the factors contributing to poor ambient quality in homes (Ocheieng *et al.*, 2012; Fullerton *et al.*, 2009) when cooking with biomass fuels. The altering of cooking environment are not sufficient enough to improve on air quality in homes as buildings

are closely built to each other. The use of outdoor kitchens and the presence of eaves in buildings partially allowed infiltration of cooking smoke into homes thereby compromising the air quality. The retaining of fire overnight in the hearth in indoor kitchens to avoid lighting cold wood in the morning, further increased particulate matter concentrations in buildings.

The difference in cooking location was not in any way better for buildings air quality when households largely relied on biomass fuels for domestic activities which allows $PM_{2.5}$ concentrations to be high regardless of kitchen location. The cooking smoke generated from cooking locations diffused into the buildings and wafts around, which made the daily average of 25 µg/m^3 for $PM_{2.5}$ as recommended by WHO (WHO, 2010) to be exceeded for buildings air quality. It shows that air quality failed to meet WHO guidelines and there are wide gaps between guidelines and the real air quality in buildings. $PM_{2.5}$ concentrations were high in the buildings regardless of kitchen location. As households largely relied on biomass fuels for domestic activities both household and neighbourhood air quality would be deteriorating which further echoes Akpalu *et al*.,s study.

Although, particulate matter measurements in peri-urban households are limited Nigeria, studies carried out urban areas of developing countries
The study was carried out during a single dry season which could not account for seasonal effects of fluctuations in the moisture content of wood fuel. Since, the daily temperature and humidity were not constant throughout the year, it is impossible to mitigate for the seasonal effects during this study.

Conclusion

Findings from this study shows that emissions from the different kitchen locations contributed to the high $PM_{2.5}$ in buildings. With continued use of biomass fuels for domestic activities, particulate matter levels would always be high in buildings and further impact on the health of the householders. There is a need to both consider cooking locations and fuel types in order to enhance indoor air quality in buildings. Current study was limited to a number of houses in Irasa community during the dry season. Therefore, the seasonal variations in the study area shows that indoor air pollutions would not be the same all the year round.

Acknowledgement

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Educational Planning: Dropout of CWSN and SLD Children in India

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Abstract

India is striving for universal enrollment up to secondary level in schools. The planning documents reveal that Net Enrollment Ratio (NER) is 88.1 for primary, 70.02 for upper primary, and Gross Enrollment Ration (GER) is 66.4 for secondary and 39.3 for Sr. secondary classes in India. The paper analyses the data on disability in schools as reported under Unified District Information System of Education (UDISE), which is collected since 2010 on ten types of disabilities. The data reveals the pattern of enrollment and dropout of CWSN in general. Out of all the disabilities, data on SLD is discussed specifically as it is hidden disability and misses the focused attention of educational planners. The findings reveal that dropout of CWSN starts from class V onwards. The education system is retaining 12.02 percent CWSN and 5.3 percent SLD only in class XII who were enrolled in class I. The findings point out that CWSN are getting enrolled but not being retained in the schools. Thus these findings are significant to examine existing policies for access and retention in schools, to modify teaching learning strategies, evaluation provisions and incentives schemes to retain the enrolled CWSN. The drop out of SLD from the education system is a very big loss to the country as these children are genius and could prove to be big asset. Besides enrolled children there is a large number of out of school CWSN who need to be enrolled. The paper would help educational planners to build inclusive education in India and also to achieve target of universal learning along with universal enrollment.

Keywords: Policy on CWSN; Enrollment of CWSN; Dropout of CWSN; Retention of SLD

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Universal Secondary Education is the Goal

The Sustainable Development Goals (SDG) has specifically mentioned 'education' as one of the seventeen goals. Education for all the boys and girls up to secondary level is to be achieved by the year 2030. India is one of the countries striving to achieve the target. In the year 2000, Millennium development goals (MDG) were agreed upon by 189 countries. In continuation of the MDGs, and on completion of the target year of MDG in 2015, SDGs have been planned for the countries. India has made significant progress on many goals but is off-track on the targets to achieve universal enrolment and completion of elementary education (UN 2015). Since India has lagged behind in the achievement of educational goals of MDG, it is all the more challenging to achieve next level of goals as defined in the SDGs. In the SDG the aim is for education to not only become universal for elementary level but the goal now has been scaled up to secondary level. It is a challenging task because India has to strive to achieve universal elementary education as well as secondary education by 2030. Nevertheless it is the challenge educational planners have taken upon themselves. In order to plan for the strategies to achieve the target by 2030, it is desirable to study the status of enrollment and retention at present in India, demographic profile and identify areas to be strengthened.

Status of Enrollment in Education in India

The total targeted population for universalisation of education up to Sr. secondary level is 301.4 million in the age group of 6-17 in India. If we further divide it in age cohorts there are 206.11 million persons in the age group of 6-13 for elementary level education and 95.32 million children for the secondary level education in the age group of 14-17. However out of 301.4 million, only 254.8 million are enrolled in classes I- XII in the year 2013-14 (MHRD 2014). The enrollment is neither evenly distributed in all classes nor corresponding to age cohort in the population. There is difference in enrollment in various stages of education. The Gross Enrollment Ratio (GER) is 97.0 percent in elementary education level in India in the year 2013-14 and Net Enrollment Ratio (NER) is 88.1 percent for primary level and 70.02 for upper primary level for the year 2013-14. At the secondary stage the GER for the classes IX to X is 66.4 percent and for the classes XI to XII is 39.3 percent for the same year (MHRD NUEPA 2014). The enrollment figures thus show that children are getting enrolled but are not retained and are not progressing to higher classes.

The SDG target is to retain the children in school up to class XII. To explore why system is not able to retain children and also who are these children who drop out, a national survey was conducted by Ed.CIL in 2014 and the findings are similar to the report of the Planning Commission of 2012. It is reported that it is most difficult to enroll children with disability. Both the surveys pointed out that a major chunk of out of school children are those with disabilities. It may mean that 47 million children out of 301.4 million children were are not enrolled or who have dropped out could be the children with disability.

Out of the 2.21 percent disabled population in India, 1.54 percent is in the age group of 5-9 years and 1.82 percent in the age group of 10-19 years (CENSUS 2011). Of this only 1.17 percent i.e 25.6 million children are enrolled in classes I-XII (Mehta. A. 2015). This paper attempts to study number of children with disability in the country,

their retention and transition from lower classes to higher classes in the school, their share in the GER and in NER. This paper explores the possibility that low GER and NER could be due to non identification and low retention of CWSN in the education system.

Disability- Sources of data

The numerical estimation of children with disability is contingent upon the definition of disability adopted for enumeration purposes. There are two Acts which define disability. As per Persons With Disability Act (PWD) 1995, there are seven types of disabilities. These are Blindness, Low vision, Leprosy-cured, Hearing impairment, Loco motor disability, Mental retardation, Mental illness. Besides the PWD Act there is the National Trust Act which defines four types of disability namely Autism, Cerebral Palsy Mental Retardation and Multiple Disabilities. Most of the education policy and planning documents such as Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamic Shiksha Abhiyan (RMSA) have adopted the definition and types of disabilities as given under PWD Act and national Trust Act. The PWD Act is under revision. The revised PWD Act may provide a more comprehensive list of disabilities by merging the two and adding a few more.

There are at present three sources of data on disability in India. These are Census, National Sample Survey Organisation (NSSO) and District Information System in Education (DISE).   The three data are not only collected by three different government organizations but cover different categories of disability. Census data is considered less reliable since data on disability is 'self reported'. The same is true of NSSO data on disability. The NSSO data has additional demerit of being based on sample population. The DISE data is based on school and households data collected annually by teachers. More over identified children are diagnosed for type and degree of disability by the medical team. Therefore DISE data is considered comparatively more reliable data on disability in India for planning of education. The DISE has taken ten disabilities in its ambit. These are Blindness, Low vision, Hearing, Speech, Locomotor, Mental retardation, Learning disability, Cerebral palsy, Autism and Multiple disabilities. It has dropped Leprosy cured and mental illness of PWD Act and has added Speech, Cerebral palsy, Autism and Learning disability in its data base (Mehta. A. 2013). The children with disability are called Children with Special Needs (CWSN) in the educational policy documents. For this paper UDISE data on disability is analyzed and CWSN term is used for students with disability.

In India, household surveys and special surveys are carried out every year by all states to identify CWSN under a centrally funded programme Sarva Shikha Abhiyan (SSA). It is estimated that 27.79 million children are CWSN. Out of that 25.03 million children with special needs (90.07% of those identified) are enrolled in schools. Further 12946 children with special needs are being covered through School Readiness Programme and 01.85 million children with special needs are being provided home-based education in 31 States/ UTs. In all 97.19% of the identified CWSN have been covered through various strategies (MHRD 2015).

The enrollment status of CWSN in the classes from I to class XII is studied to understand their retention in the elementary as well as secondary education. The

enrollment of CWSN in last four years in the elementary classes is as given in the following table:

Table-1
Enrollment of CWSN at National Level

Years | Classes	I	II	III	IV	V	VI	VII	VIII	Total
2010-11	66,869	62,250	67,789	69,011	68,448	62,423	60,268	45,318	5,02,376
% of Total (I-VIII)	13.31	12.39	13.49	13.73	13.62	12.42	11.99	9.02	100
2011-12	1,08,623	1,08,496	1,16,399	1,13,793	1,11,542	96,131	92,978	83,535	8,31,497
% of Total (I-VIII)	13.06	13.04	13.99	13.68	13.41	11.56	11.18	10.04	100
2012-13	3,22,078	3,23,081	3,53,704	3,36,422	3,07,497	2,59,432	2,41,630	2,04,798	23,48,642
% of Total (I-VIII)	13.71	13.75	15.05	14.32	13.09	11.04	10.28	8.71	100
% of Total (I-XII)	12.55	12.59	13.79	13.11	11.99	10.11	9.42	7.98	91.58
2013-14	2,98,625	3,43,149	3,79,357	3,64,245	3,35,768	2,75,583	2,70,890	2,36,523	25,04,140
% of Total (I-VIII)	11.92	13.7	15.14	14.54	13.4	11	10.81	9.44	100
% of Total (I-XII)	10.69	12.28	13.58	13.04	12.02	9.86	9.7	8.46	89.66
2014-15	2,43,916	2,85,093	3,39,328	3,48,274	3,23,461	2,59,288	2,50,706	2,29,965	22,80,031
% of Total (I-VIII)	10.69	12.5	14.88	15.27	14.18	11.37	10.99	10.08	100
% of Total (I-XII)	9.52	11.13	13.25	13.6	12.63	10.12	9.79	8.98	89.04

Source: Elementary Education in India, Analytical Tables- 2010-11 *(PP-95),* 2011-12 *(PP-95),* 2012-13 *(PP-102),* 2013-14 *(PP-100),* 2014-15 *(PP-95).*

The table-1 shows that there is increase in the enrollment of the children in the classes II III and IV in the following year. It is 66869 in the year 2010-11 in class I and has gone up to 3,64,245 in the year 2013-14 in class IV. However this increase is not sustained. The data of the same year also shows that in all the years the enrollment numbers are declining after the class IV, the decrease in the enrollment starts and continues up to class VIII. In the year 2012 there are 3,07,497 students enrolled in class V. The enrollments is declined to 2,29 965 in the year 2014-15 in class VIII. Similarly, the table shows that enrollment is increasing every year from the previous year except the year 2014-15. The increase in the enrollment is good indicator of the interventions made by the government for universal elementary education. The position of increase and sustainability of enrollment year wise and class wise is depicted the following chart for better understanding:

Chart -1
Enrollment of CWSN at National Level (Classes I-VIII)
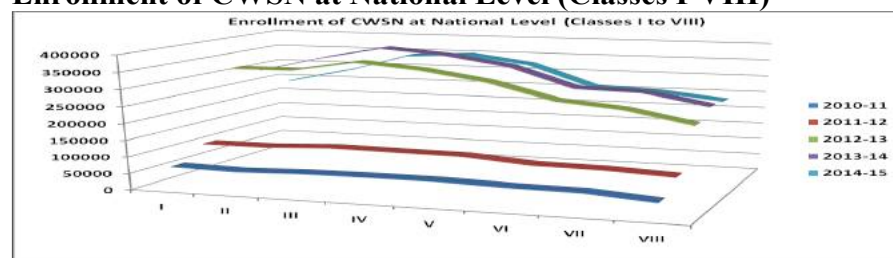
The chart-1 depicts that enrollment of CWSN in the classes in the years 2011 and 2012 is low. Whereas, enrollment has significantly increased in the years 2013, 2014, 2015 in lower classes but has declined in higher classes. Decline is prominent in the classes VI and VIII. This suggests that enrollment strategies of door to door survey

by teachers have been successful in enrolling children. However retention of the children in the school remains poor.

The status of enrollment in secondary and higher secondary classes may further indicate and strengthen the fact that strategies for retention are weak. The enrollment of CWSN in secondary classes is given in the following table:

Table -2
Enrollment of CWSN in Senior Classes

Years |Classes	VIII	IX	X	XI	XII	Total I-XII
2012-13*		83,535**	87,037	23,362	21,831	25,64,407
% of Total (I-XII)		3.25	3.39	0.91	0.85	100
2013-14	2,36,523	1,27,833	99,718	32,260	28,683	27,92,634
% of Total (I-XII)		4.57	3.57	1.15	1.02	100
2014-15		1,21,756 -48.52% Dropped	97,815 -23.48%	31,709 -68.20% Dropped	29,337 -9.06 Dropped	25,60,648
% of Total (I-XII)		4.75	3.81	1.23	1.14	100

    Source: DISE Data base
     Note: * data for secondary classes is available from 2012-13 year only
          ** Data not validated so not added.

As seen in the table-2, decrease is quite substantial. There were 1, 27,833 CWSN enrolled in class X in the year 2013. As per target, all should have transited to class X in the year 2014-15. But only 99,718 could transit. It means approximately thirty thousand children have dropped out of the system amounting to 23.48 percent dropout. Again there is 68 percent drop after class X. This leaves only 1.14 percent children who were enrolled in class I to progress to XII.

To achieve universal enrollment up to secondary stage, all enrolled children of class I need to be retained in the school. The drop out from class I to XII in last five years is depicted below:

Chart-2
Enrollment of CWSN at National Level (Classes I-XII)
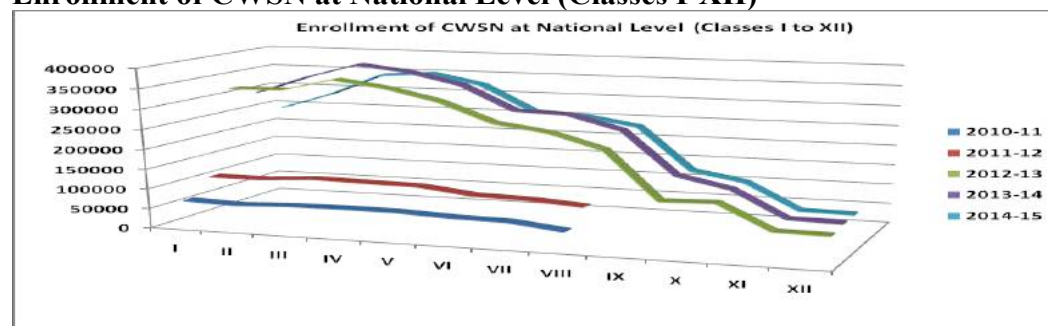
The chart-2 shows that drop in the enrollment are very steep. The highest enrollment is in the year 2013- 14 in class I but it could not change the status of retention. The retention is not different; it is almost same in all the years up to class XII. The

enrollment data of different classes clearly indicates that there are issues of retention of CWSN in the education system.

Specific Learning Disability

Thus the data shows that retention of CWSN as a whole is poor. The data presented in the following paragraphs show that it is all the more so in case of the disabilities which are not visible like Specific Learning Disability (SLD) because it is more difficult to identify SLD children. As a result, they are not taken care of. Therefore it poses a bigger challenge and tougher target for universal enrollment.
Specific Learning disability is a hidden disability. As discussed earlier it is not included in the PWD Act. As a result, it is not covered specifically for educational provisions in terms of funding. In the processes, hidden disability gets further hidden. As per the research findings, there could be 15-23 percent children having SLD in any student population (Dilshad H. 2006; RCI manual, Gupta V. 2014). SLD children cannot survive in the education system if special provisions are not provided to them (Gupta.V. 2009). The data on enrollment and retention may throw light on need of strengthening educational provisions.

As per the estimates given in the DISE, The enrollment of SLD is as given in the following Table-3:

Table-3
Enrollment of SLD at National Level

Years | Classes	I	II	III	IV	V	VI	VII	VIII	Total
*2010-11	30,404	31,483	33,484	32,006	26,232	19,395	16,744	9,439	1,99,187
% of Total (I-VIII)	15.26405	15.80575	16.81033	16.06832	13.16953	9.737081	8.406171	4.738763	100
*2011-12	27,362	32,716	36,306	34,106	28,823	20,418	18,028	12,416	2,10,175
% of Total (I-VIII)	13.01867	15.56608	17.27418	16.22743	13.71381	9.714762	8.577614	5.907458	100
2012-13	29,256	38,826	44,898	44,378	35,951	25,168	22,062	10,528	2,51,067
% of Total (I-VIII)	11.65267	15.4644	17.88288	17.67576	14.31929	10.02442	8.787296	4.193303	100
% of Total (I-XII)	10.74182	14.25561	16.48504	16.29412	13.2	9.240847	8.100427	3.865529	92.18339
2013-14	28,124	40,632	49,509	49,254	41,553	28,980	26,371	20,003	2,84,426
% of Total (I-VIII)	9.887985	14.28561	17.40664	17.31698	14.60942	10.18894	9.271656	7.032761	100
% of Total (I-XII)	9.190069	13.2773	16.17804	16.09471	13.57826	9.469784	8.617242	6.536373	92.94178
2014-15	24,109	32,904	41,602	42,933	39,147	27,272	24,526	19,096	2,51,589
% of Total (I-VIII)	9.582692	13.07847	16.5357	17.06474	15.5599	10.8399	9.748439	7.590157	100
% of Total (I-XII)	8.90127	12.14847	15.35985	15.85127	14.45344	10.06908	9.05523	7.050423	92.88903

Source: Elementary Education in India, Analytical Tables- 2012-13 *(PP-102),*
        2013-14 *(PP-100),* 2014-15 *(PP-95).*

The table -3 shows that the enrollment of SLD is found highest in the class III. It is higher from the class I and II. The figure is supportive of the fact that SLD could be identified in class II onwards only when reading and writing starts. Identification in class 1 is also not desirable. The table is also showing that though number is increasing upto class V but starts declining after that. The decline in enrollment in higher classes continues and comes down to dismal number i.e.5.9 percent of the total enrollment in the class VIII in the year 2011-12. The enrollment numbers and percentages in higher classes could be still lower. The data on enrollment of SLD in higher classes are given in the table-4 below:

Table-4
Enrollment of SLD in Higher Classes

Years	Classes	IX	X	XI	XII	Total
*2012-13	#12,416	6,732	1,053	1,088	2,72,356
% of Total (I-XII)	4.558739	2.471765	0.386626	0.399477	100
*2013-14	10,517	8,183	1,583	1,317	3,06,026
% of Total (I-XII)	3.436636	2.673956	0.517276	0.430356	100
*2014-15	9,266	7,292	1,403	1,299	2,70,849
% of Total (I-XII)	3.421094	2.692275	0.518001	0.479603	100

Source: UDISE
'*' indicates that the data taken in these academic years is taken from UDISE (Raw Data).
'#' indicates that the data taken in respective year and class is taken from
 UDISE (Raw Data) and not validated

The above table -4 shows that enrollment is declining significantly. If there were 6,732 children in 2012 in class X, only 1, 583 could progress to class XI in the year 2013-14. It shows that only one student out of four could reach to class XI.   This stage is showing greatest fall of 75 percent in the transition to next higher class. It is higher than the total CWSN dnrollment drop which was 66 percent. The dropout is so huge that only 0.47 percent children could progress to class XII from class I. The fall in enrollment of SLD at various levels is also depicted in the following chart:

Chart-3
Enrollment of SLD at National Level (Classes I-XII)
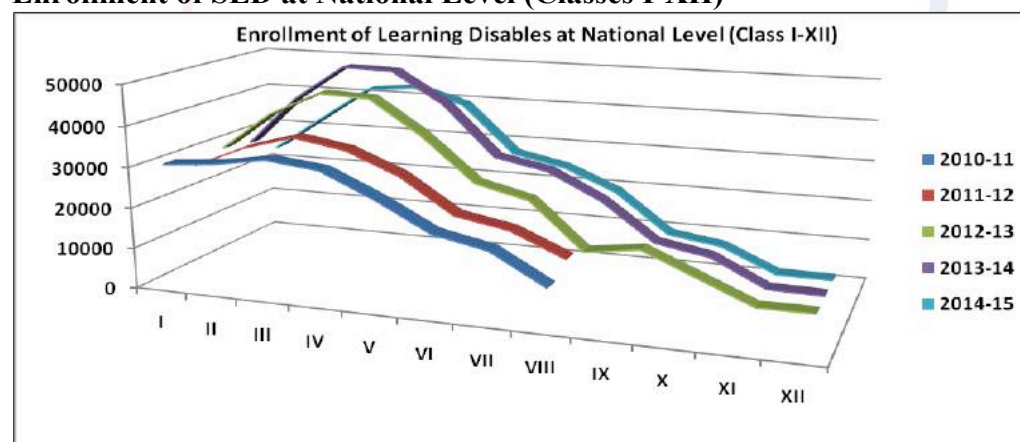
The Chart-3 shows that SLD are enrolling in various years which may not be corresponding to their number in the population. But even those who are enrolled are finally dropping out of the system**.**   The dropout pattern observed of SLD has similarity to CWSN data. It is higher in classes VI, VIII, X and XI.   But the degree of the dropout of SLD is much higher than the drop out of the CWSN.

The droppot of CWSN is cause of concern but drop out of SLD is bigger concern as it is hidden disability.   More over SLD are bestowed with such talents which if harnessed can result into genius and if not, may get into anti social activities (RCI manual pp 163).   Further schools are meant to be learning places. Therefore this dropout phenomena is to be arrested by the educational planners. The drop out data

provides the scope of work, nitigrities of the work and challenges to be overcomed by the planners for making education universal in India. The dropout and retention of CWSN and of SLD is further discussed below.

Drop out Analysis

The analysis of dropouts presents the range of the problem, quantum of work for the educational planners. The drop out of CWSN in various years is calculated from the enrollment of class I to the enrollment of class XII in that particular year. Though actual picture could be presented if data was available of all the twelve consequent years. However data of one single year is taken with the assumption that pattern of enrollment was same in last eleven years. The drop out and retaintion percentages of CWSN and SLD are presented in the Table-5 below:

Table- 5
Drop-Out Analysis of CWSN and SLD Class I-XII in Percentages

	CWSN		SLD	
	Dropout	Retained	Dropout	Retained
2012-13	93.22	6.7	96.28	3.7
2013-14	90.39	9.6	95.31	4.6
2014-15	87.97	12.02	94.61	5.3

Source: Calculation based on UDISE Data

It is encouraging to note data given in the table- 5, that shows that drop out of CWSN and of SLD is reducing every year. It was 93.22 percent in the 2012-13 and went down to 87.97 percent by 2014-15. It has almost doubled the retention of CWSN from 6.7 percent to 12.02 percent. However the retention of SLD is fifty percent lesser than CWSN. If retaintion reached to 12 percent in case of CWSN, it remained at 5.3 percent for SLD in the year 2014-15. It is found that the retention is increasing, but the rate of increase is not sufficient. And it leaves large scope of work to be done. The scope of work left for enrolled CWSN and SLD is depicted in the following chart:

Chart-4
Retention and dropout of CWSN and SLD
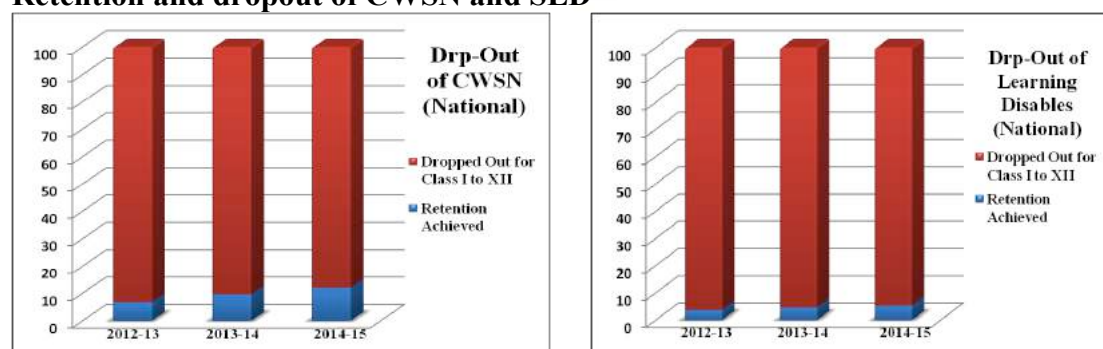
Source: based on UDISE data

The red area in chart presents the dropped outs during the course of progression from class I. It is the target area yet to be achieved. The GER of all the students in elementary , secondary and Sr. secondary level as mentioned earlier is 97 percent,

66.4 and 39.3 percent respectively. The charts shows that GER of CWSN and SLD is much lower. It should match the GER of all other students.

Although gloomy, this paper presents only the status of those among the CWSN who are enrolled in the system. The enrollment of out of school CWSN and non Identified SLD in the school population is another and greater challenge. As mentioned earlier CWSN and SLD both are under identified in the population. The number could go up to 30 percent of the population but it is only 1.17 percent at perecent.

Conclusion

Transition from elementary level to secondary level is a requisite for universalization of secondary education. Therefore a dropout along the way is a challenge for the educational planners. Although a number of strategies have been formulated and implemented to address dropouts. One of them is 'no detention policy' till class VIII. Besides that strategies specifically under SSA and RMSA to support education of CWSN include assessment camps to identify disability, appointment of resource teachers at block level, Training of teachers, transport allowance, corrective surgery, aids and appliances, counseling to parents, resource room at each block, provisions during exams and special funding per child @ Rs. 3000/- per year.

 As evident from the enrollment data analysis presented in this paper, these strategies are not sufficient and there is need to upscale all these measures. To upscale, educational planners need authentic and comprehensive data. However, as pointed out in this paper that data on disability in India is not fully reliable. Therefore there is need for comprehensive and reliable house hold surveys for enrollment of CWSN. The surveys should be done by trained para medical professionals.   After the identification, each student needs regular medical checkup for management of the disability. The enrolled CWSN need to be followed up to address medical needs and educational needs on regular basis. One time medical aid given in the form of corrective surgery or aids in the form of clippers, wheel chairs etc. are not sufficient for retention in the schools. Besides medical need, there is requirement to focus on individual educational need of the CWSN.

There are 301.4 million children who need to be retained in the educational system. Out of these, as per research estimate 30 percent could be CWSN i.e. 90.42 million including SLD. As discussed, only 2.56 million CWSN are enrolled in the year 2015 up to class XII including SLD. Out of that only 0.27 million are SLD against the expected number of at least 66.35 million. There is a greater need to focus on hidden disabilities. Their identification is not adequate. Only 0.70 percent SLD is identified of total enrollment. It is grossly below the norm.

Non identification of SLD could be the reason of dropout of many children in the total general population.   Educational planners need to focus on comprehensive identification of all CWSN, particularly SLD to enhance GER and to achieve universal enrollment up to sr. secondary level.

It is recommended that besides making elementary education compulsory, there is need to evolve strategy which is successful in retaining CWSN in the educational system. One good example could be of that Amar jyoti model. It is a holistic

approach. It provides for medical, social, recreational, physical and academic needs of the CWSN in the school itself (Amar Jyoti 2015).

At present Government is spending up to Rs.3000/- per CWSN. Most of it goes into disability management activities. There is no focus on learning devices for CWSN. More over requirement of every CWSN varies from each other. The facilities provision needs to be according to the needs of every CWSN. It is a tall order of requirement. Government of India may not be in position to supply all the required funds. In the absence of required resources, cooperation of NGOs is must. One such example is of CBM, it is helping in few states of India to help poor disabled children (CBM India website) to go to school.

To conclude, India is far behind the target of universal enrollment and achievement. In order to achieve the target of universal enrollment up to sr. secondary education by 2030, a targeted, sustained and full of resources effort of government of India is required to enroll and retain CWSN in the education system. It is only possible by proper prior planning to prevent poor performance on achievement of universal enrollment up to Sr. Secondary level.

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The Access of Disabled Persons on the Romanian Labour Market: An Institutional Ethnography of the Role of Social Welfare

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Abstract
Using a qualitative approach based on an institutional ethnography of social organization of work inclusion for disabled persons, the current paper addresses the specific ways in which the individual experiences of the Romanian disabled persons, in society and on the labour market, are influenced and shaped by the social relations of textually mediated discourse. It draws on the results of a larger study, conducted between 2014 and 2015 in Romania, as part of a research project focusing the dysfunctionalities that impede the labour market access of disabled persons in Romania and the institutional arrangements and structural mechanisms that underpin these dysfunctionalities. The paper reveals a particular type of consonance between the Romanian legislative provisions, institutional arrangements and local practices, that allows for the concept of 'protection' of the disabled persons to transcend its initial purpose and philosophy and start working against the disabled persons. The article also shades some light on the way in which the current Romanian welfare arrangements contribute to keeping the disabled persons outside the labour market, by categorizing them as 'vulnerable persons' and thus justifying their exclusion from employment.

Keywords: employment of disabled persons, social welfare, unemployment, Romania, social vulnerability

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1. Introduction

Persons with disabilities and households with disabled persons in general experience worse social and economic outcomes than do persons without disabilities. Disabled people in general have lower income compared to non-disabled people, and they (and their families) often also incur additional costs in order to to achieve a standard of living equivalent to that of nondisabled people.

At international level, the inequalities between disabled and non-disabled persons continue to persist, in terms of poverty rates (OECD, 2009; ANED, 2013), and educational and labour market outcomes (WHO & WB, 2011). Many researchers find that participation in the labour market is one of the most important ways of bettering people's economic and social inclusion. However, when it comes to social and labour market inclusion, people with disabilities experience a number of obstacles; structural (that make their physical access to education, employment, health care, or participation at the community life difficult, if not impossible), economic (lower income, higher costs) and even cultural (misconceptions about their abilities, direct or indirect discrimination etc.).

In Romania, it seems that disabled people face even more serious challenges in getting and keeping paid work compared to other European Members States. Research (SAR, 2009; ONPHR, 2007 apud SAR, 2009) shows that, compared to their non-disabled co-nationals, disabled people in Romania have an extremely low level of inclusion on the labour market. According to the cited reports, the percentage of disabled people having paid jobs varies between 5% (ONPHR, 2007 apud SAR, 2009) and 12.7% (SAR, 2009) from the total number of disabled persons.

It is often perceived that dependency of long-term disability benefits may generate disincentives for people to seek employment and return to work (OECD, 2010). This is especially the case for those who are less skilled because of poor access to education and/or training, or whose jobs would be primarily low paid jobs. One reason is that the benefit provides a regular income – even though small – that the person can rely on. Loss of this regular payment and reliance on low-paid, sometimes seasonal, work may result in no regular income and little sense of security.

In a report from 2010, the OECD notices that disability benefits have become a type of financial support of last resort because unemployment benefits are harder to access, early retirement schemes have been phased out, and low-skilled workers face labor market disadvantages. Spending on disability benefits is an increasing burden on public finances, rising to as much as 4–5% of GDP in countries such as the Netherlands, Norway, and Sweden (OECD, 2010).

System reform to replace passive benefits with active labor market programs can make a difference. Evidence from Hungary, Italy, the Netherlands, and Poland suggests that tighter obligations for employers to provide occupational health services and to support reintegration, together with stronger work incentives for workers and better employment supports can help disabled persons get back on the labour market (OECD, 2010). The discussion, however, is not as simple as just making the choice between passive or active measures when deciding the arrangements of the system for

ensuring the equal opportunities of the disabled persons. Many more issues have to be taken into account and understood, before a restructuring of the system is designed.

In this article, we discuss possible ways in which certain institutional arrangements, in the Romanian cultural context, may contribute to keeping the disabled persons outside the labour market, by discouraging the accessing of employment, through neglecting the provision of adapted services and replacing them, instead with various forms of financial support.

2. Methodology of the study

Documenting the ways in which social policy and its underlying legislative and institutional arrangements influence and shape the everyday experiences of those considered as their 'target groups' requires for a particular approach that should find the proper manner to give a voice to all parties involved.

The current article was elaborated based on the results of a larger study, conducted between 2014 and 2015 in Romania, as part of a research project focusing the dysfunctionalities that impede the labour market access of disabled persons in Romania and the institutional arrangements and structural mechanisms that underpin these dysfunctionalities.

Using a qualitative approach based on an institutional ethnography of social organisation of work inclusion practices for disabled persons, the study investigated the way in which the disabled persons' experiences of barriers towards employment and access on the labour market are hooked up or derive from institutional arrangements or practices.

Institutional ethnography (IE) is a 'method of inquiry' (Smith, 1990, 2005) that attempts to describe the 'interface between individuals' experiences and institutional relations' (McCoy, 2006, p. 109). The purpose of institutional ethnography is to investigate the 'empirical linkages among local settings of everyday life, organizations, and translocal processes of administration and governance' (DeVault & McCoy, 2006: 15). The starting point is always from the perspective of a certain group of people, in this case, the disabled persons. However, the purpose of IE is not to generalize on a particular group of people, but rather to illuminate the social and organizational arrangements that transcend individual experiences, finding and describing the social processes that have 'generalizing effects' (DeVault & McCoy, 2006, p.18).

A total number of 95 interviews were conducted, 24 of them with disabled persons and/or family members and 71 with representatives of various institutions, relevant for the employment of disabled persons (education, employment, social services, employers etc.). The interviews were recorded, transcribed verbatim in Romanian and translated in English. The analysis of the data collected through the interviews was conducted in a mixed team, involving Romanian and Norwegian researchers.

The results of our research show that the challenges faced by the disabled people when accessing the Romanian labour market are present at individual, institutional and systemic/structural levels, and we have dedicated a separate report to the analysis and interpretation of each level (Alexiu et al, 2014; Alexiu et al 2015a; Alexiu et al,

2015b). Researchers in the project have also published a number of scientific papers (Alexiu & Birneanu, 2014; Baciu et al, 2015a; Baciu et al, 2015b; Birneanu et al, 2016; Baciu & Lazar, 2016) addressing the mechanisms through which these challenges take shape and evolve in various social, educational and economic settings. In this paper, however, we focus upon a special topic previously unaddressed in publications from the project. We analyze the particular way in which the current Romanian institutionalized welfare arrangements may contribute to keeping the disabled persons outside the labour market, by certain ways of categorizing them as 'vulnerable persons' and organizing for different sorts of 'assistance' measures which in fact justifies their exclusion from employment rather than facilitating active participation.

3. Research findings

3.1. The social benefits trump social services for disabled persons in almost every aspect
This observation resulted from the analysis of the following dimensions that characterize the system of protection and support for the disabled individuals:

Organization. The granting of the financial entitlements associated with disability (i.e., the disability allowance) is done based on an 'expert' evaluation, which, most times, represents a humiliating, or at least offensive experience, evaluation undertaken by a commission, whose members rarely undergone a training on approaching or communicating with the disabled persons. Because the main stake of the handicap certificate is, after all, the disability allowance, the commission examines carefully the persons that present themselves before it, like they would fraudulently want to pass as disabled and obtain undeserved rights. At local level, the institution that coordinates the process of evaluation, granting, revoking, or reevaluation for the handicap certificate (the official recognition of the disability, under the Romanian law), is called The General Direction of Social Assistance and Child Protection (GDSACP) and is present at the level of each county. However, the interaction between the disabled person and this institution (one of the most relevant, for the topic of disability, from the entire system put in place) is almost exclusively related to the process of issuing the handicap certificate, and much less related to the process of social inclusion of the disabled person. Once the certificate is issued, in most of the cases, the contact between the two parties (the disabled person and the GDSACP) is interrupted until the next moment they need to make contact again, due to the same reason (expiration of the certificate and consequent re-evaluation for a new one);

Proision. The next institution that makes contact with the disabled person is the Local Public Authority from his domicile, who is in fact the institution that will actually provide the handicap-related entitlements. Again, this will be, in most cases, a one-task-based interaction, limited to the provision of the financial entitlements. The mentioning of counseling, information and job mediation services provided by this institutions are exceptional and mainly appear in the accounts of the disabled informants from the rural areas, where, because of the size of the community (small or very small), the inhabitants know each other, so the social worker at the level of the Local Public Authority, knows personally the disabled person or her family, and they provide them, mainly informally, with news or information about existing vacancies

or other type of professional development opportunities (trainings, qualification programs etc.);

Monitoring. The research results show that one of the main underlying reasons for the creation of the dense institutional network guarding the provision of support for the disabled persons is strongly related to the need of all institutions involved (or persons acting on behalf of an institution) to be reassured that someone else is taking the responsibility of making the decision of granting a certain amount of money to the beneficiary, or, at least, that they are not to the only ones involved in this decision-making process. This 'fugue' of responsibility is caused by the assimilation of certain financial rights with the issuance of a handicap certificate and, because where money is involved, there is also suspicion of corruption, no one wants to be the object of this suspicion, or, at least, the *only* object of suspicion. Each and every structure involved wants to feel that they are part of a larger apparatus, and that the decision taken is not left entirely up to them, but is rather based on objective criteria and justified and approved by other structures as well;

Perception. The first type of support mentioned by our disabled informants (and, often, the *only one*) was always the disability allowance. This type of benefit is granted to the disabled person that received a handicap degree, following a medical assessment. It is provided no matter the labour market status of the person (unemployed, in employment or looking for a job), it varies and is calculated based on the severity of the disability. The second type of support, much less present in the disabled informant's accounts, refers to the tax exemption on the wage (or other types of incomes resulted from work activities) earned by that persons while in employment, in the current arrangements meaning 16% of the total value of that income. An interesting aspect raised by some disabled interviewees was the practical negative outcomes of such exemption on the work relations of the person, due mainly to the perception of her work colleagues that, for the same work as they, on the same qualification and position, the disabled person gets payed more than them.

3.2. The provision of social services is almost exceptional, rather than habitual
This finding is based on the following arguments:

The support for employment comes mostly from the private sector. Most of the disabled informants who have received assistance and support in identifying and accessing a job, mentioned they managed to do it with the assistance of organizations from the nongovernmental sector. Sometimes, especially in small rural communities, this support was mediated by the local public authorities. None of the informants recalled, even when specifically asked to do so, the Public Employment System (PES) agencies, as a source of support in finding employment. Moreover, the interviews with the PES representatives showed that, not only that the agencies have a small number of disabled persons registered with them, but they also encounter little success in their endeavors of finding them a job;

The law provisions encouraging employment of disabled persons (i.e. quota provision) have little effect. The quota system is a legal provision designed to increase employment for disabled persons. According to this system, in Romania, the employer who has more than 50 employees, should have among them, at least 4% disabled. In case he does not manage to reach this 'quota', he has two choices: pay a

contribution to the state budget, equivalent with an average salary, for every employee he hasn't hired or, buy, for the same amount, products or services produced or provided by Protected Units employing disabled persons. Still, the interviews with the representatives of the PES agencies and employers show that most employers prefer to pay the penalties or buy the goods or services required to fulfill the quota, rather than hire disabled persons. At the same time, the financial incentives for employers, meant to encourage them in hiring disabled persons, are not sought after by this category, mainly because of the employers' perception on the procedure for accessing such incentives as too complicated, while the obligation regarding the periodical reporting is seen as a supplementary burden that, especially the small employers, are not available to carry.

No clear institutional authority / responsibility neither on the target group (disabled), nor on the matter (employment). Every agency or institution which carries out activities that are relevant for the field of disability has its own database, mission, approach and objectives, rarely communicating with one another in order to exchange information or to collaborate, and this is happening mainly because they lack convergence in their activity, in spite of the fact that their joint actions should lead to the same result.

3.3. Discrimination is present in every aspect of the disabled persons' life

The accounts of the disabled informants showed their continuous struggle with labeling, prejudice and discrimination. The experiences evoked started from early childhood and continued along the person's lifetime, unfolding new obstacles with each life stage and each new social dimension explored by the person – entering various education levels, socializing with peers, accessing and keeping employment, finding a life partner, housing etc. These negative experiences in the context of various institutional encounters shaped the informants' perceptions not only about such experiences, but also about their own role in these relationships. The expectations towards institutional interventions have therefore diminished with each new failure.

The preference for the medical model in the provision of support has produced a distortion in the perspective of the service providers about the conceptualization of 'protection'. The interviews with representatives of various institutions involved in the provision of protection and support show that, under the influence of the medical model, the system workers perceive the disabled person mainly as helpless, powerless, and thus, feel entitled to affirm a patriarchal attitude, taking some decisions on behalf of the person. Thus, a deeper issue is unfolded, beyond the terms of fair access of the disabled persons to quality services – the conceptualization of disability, in the Romanian cultural context and the ways in which the disabled person is symbolically understood and placed in the network of social interactions and transactions.

4. Conclusions of the research

Traditionally, the labor market theory suggests, for reasons of both supply and demand, that the employment rate of people with disabilities will be lower than that of people without disabilities. From the perspective of the supply side, people with disabilities will experience a higher cost of working, because more effort may be required to reach the workplace and to perform the work; also, in some countries, employment may result in a loss of benefits and health care coverage, which could represent a significant cost, sometimes, their value being comparable with the wages that could be earned through employment (Stapleton et al, 1997). Thus, the value of the 'reservation wage' (meaning the lowest wage a person is willing to work for) of a person with disability is likely to be higher than that of a person without a disability. Some authors (Kemp et al, 2006) look at this situation as a classic case of a 'benefit trap', because it could manifest, among the disabled persons, as a disincentive to the labour market integration.

However, our interviewee's accounts indicate that it is not the will to work that is lacking, but their access to the labour market, as also shown by the extremely low employment rate among disabled persons in Romania (and the general attitudes towards disability), thus indicating that discrimination and exclusion is a far greater obstacle to employment than the lack of incentives.

Following the discourse on not only what is present, but also what it lacks, we notice that, in our informants' accounts, we have an unbalanced presence of the two main actors of the social assistance system – benefits and services. While the topic of benefits is almost omnipresent in all informants' stories, at multiple levels, that of the services manages to 'escape' from the interviews most of the times, even if the inquiry is deliberately addressed towards them. This is an indicator of the strong emphasis put on the social benefits by the current Romanian institutional arrangements, in the detriment of the support services to increase social and professional inclusion for the disabled persons. Thus, the philosophy of the social assistance schemes seems to be rather compensatory, than supportive – it focuses on compensating the persons for what is perceived by the others as a 'loss' or 'deficit' (in this case, the impairment), instead of promoting the person's participation in the community or on the labour market.

The main reason for this 'tilted' perspective is that, when dealing with disability, the current Romanian institutional arrangements are still tributary to the medical model and this can be noticed in all aspects related to organizing, provision and monitoring of the support schemes provided to the disabled persons.
In order to increase employment of the disabled persons, the intervention with this category should focus much more on their need for active and tailored support, rather than the impairment itself. The assessment process, instead of highlighting the health condition (which is already ascertained by the medical records), would have a better use if focused on recommendations regarding professional tasks or type of professions the person could handle and, of course, the types of accessibility measures the employer would have to ensure to the work environment for the person.

Shifting the focus of the support from benefits to services would bring various types of improvements, among them the most important being the quality of life of the disabled beneficiaries.

High quality services would foster individualization of intervention, increase in the person's self-esteem, improved involvement of the specialists and, overall, a higher social and labour market integration of the disabled persons.

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"The Consciousness Evolution": Identification and Re-Identification after the Umbrella Movement in Hong Kong

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Abstract

Stemmed from the Umbrella Movement in September of 2014, Hong Kong had experienced dramatic social and political changes that people were being "decontaminated" from titling as political apathetic animals which were constructed under the historical manufacturing. The unprecedented integration of politics and society keeps fermenting and one of the most conspicuous narratives in the society is the identity of Hong Kong people. Hong Kong people have undergone an evolution on the consciousness of social identification as many terminologies and corresponding epitomizations have been sprung up: Yellow Ribbon v. Blue Ribbon (Movement identity in the Umbrella Movement), Mainlander v. Hongkonger (Hong Kong identity), Anti-localism v. Localism (Hong Kong identity), Old Lion Rock Spirit v. New Lion Rock Spirit (which symbolizes the core values in Hong Kong) etc.

This study aims at exploring the consciousness and identity evolution on the Hong Kong people, especially revived from the Umbrella Movement in 2014 to 2016. The interplays and correlations between movement identity, Hong Kong identity and so-called local identity would be further examined. On top of that, whereas identification and re-identification is transpiring in the society, this study would further review symbiotic relations between the mentioned identities and corresponding values by delving into several Hong Kong social and political issues.

Keywords: Hong Kong, Social and Political Identity, Consciousness, The Umbrella Movement, Social Movement, Indigeneity

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Introduction

It is ineluctable that to recount the reverberations of the Umbrella Movement in 2014, especially there are ceaseless and considerable altercations on the mutation of the Hong Kong identity after the Umbrella Movement. Undeniably that social movements and related identities interrelate in innumerable ways that more precisely, identities would facilitate social movements while consolidated identities could be the outcome of social movements (Polletta, & Jasper, 2001). By firstly constructing the boundary, communities and perceptions within the action group, catalyzed by the strong collective engagements within the network and organization and hence the shared goals advocated in the action, particular meaning, identification and consensus would be provoked during and after the social movement. Thus, this kind of symbolic integration would foster new or more consolidated identity throughout the process of social movements (Polletta, & Jasper, 2001). This is also stemmed from the differentiation from others or other groups which are already realized and perceived via symbols, practices and rituals by the external actors (Calhoun, 1994; Porta, & Diani, 2006). Thus, the solidarity of the construction of movement identity during the 79-day Umbrella Movement, hence, has ignited the orientation, inclination, and further consolidation on political identity of Hong Kong people. It also prompted a consciousness evolution on the value reconfiguration in Hong Kong society by experiencing communal political, social and cultural practices in the imaged community during the Umbrella Movement.

The Intermixture of Hong Kong Identity

The main populations before 1970s in Hong Kong were mainly the refugees from Mainland China and they perceived Hong Kong as a place for survival and stability. After 1970s, half of the people living in Hong Kong were born locally and they discerned Hong Kong as home. This combination within the community preliminarily skeletonized the intermixture of the identity of Hong Kong people. The "hybridization" of Hong Kong identity could be demonstrated via the polls conducted by The University of Hong Kong in every half year (Figure 1).

Year	Hongkonger (%)	Both (%)	Chinese (%)
Aug 1997	35	45	19
Feb 2000	38	43	14
Dec 2003	25	39	33
June 2010	25	46	28
Dec 2010	36	42	21
June 2011	44	32	24
Dec 2011	44	44	17
June 2012	46	35	19
Dec 2012	28	50	21
June 2013	40	37	23
Dec 2013	35	43	22
June 2014	41	39	20
Dec 2014	43	40	18
June 2015	36	41	22
Dec 2015	40	40	18
June 2016	42	38	18

Figure 1: The Intermixture of Hong Kong Identity 1997-2016

Source: Public Opinion Program, The University of Hong Kong
https://www.hkupop.hku.hk/english/popexpress/ethnic/

Apparently about 40% respondents identified themselves both the Hongkongers and Chinese after 1997 handover, on that account, there was a significant mergence of local identity and national identity. In the meanwhile, though there were variations on both identifications throughout 19 years, Hong Kong people averagely regarded themselves as purely HongKongers more than as purely Chinese. This was the circumstance what Brewer characterized as Dual Identity, which portrayed as 'a kind of joint membership which emerges to serve needs of distinctiveness and also inclusion' (Brewer, 1999, p.190). Hong Kong people, undeniably, are all regarded as the ethnicity of Chinese. However, the historical and political development as a British colony, Hong Kong people were exposed to an independent and local cultural settings, practices and values via different language, narrative, history, living habits, routines, collective memory, lifestyle, convention etc. (Chan, 2000; Fung, 2004). Hongkonger-Chinese Dual Identity is illustrated in Figure 2.
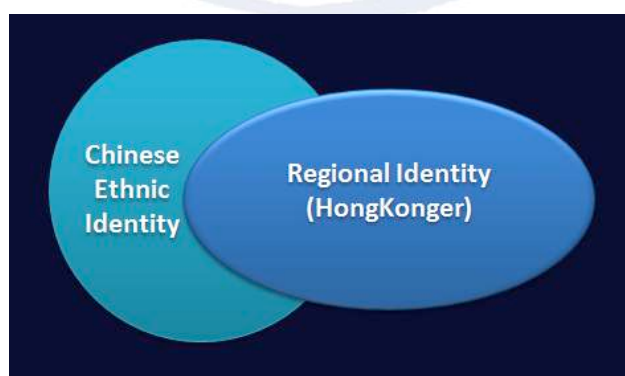
Figure 2: Dual Identity Perceived by Hong Kong People

Brewer (1991) has conceptualized the dynamic nature of social identity which is stemmed from 'the need for inclusion and assimilation' and 'the need for differentiation from others' (Brewer, 1991; Brewer, 1999). Applying Hong Kong's

situation to this model, the dual identity expresses its intention to 'differentiate from non-Chinese HongKongers and the mainland Chinese' (Brewer, 1999, p.192), i.e. dual identity in Hong Kong catalogues people who were born and live in Hong Kong with Chinese ethnicity. Simultaneously nurturing by the historical and political development, Chow (2015) denoted that the Sino-British Joint Declaration in 1984 was the watershed to unfold the self-realization process on identity of Hong Kong people. Except being the residents of Hong Kong, after the 1997 handover, Hong Kong people would also become the citizens of China institutionally, but not consciously, behaviorally and even politically (Chow, 2015, p.72). Hong Kong has undergone 150 years substantial British colonial governance and was granted high-degree of administrative, economic and social self-sufficiency governance. Under this 'network of public politics' (Tilly, 2007), Hong Kong was an institutional form of quasi-sovereign state which was incorporated by Hong Kong citizenry. Hong Kong people have also tasted the period of indigenization and construction of Hong Kong unique identity from 1970s after the left-wing riot in 1967 (Wu, 2016). The reality was, to a certain extent, Hong Kong was an independent social polity. Ergo, Chinese Central People's Government aimed at undermining the undercurrent treachery of Hong Kong people towards Chinese authority, more precisely, after 2003 July 1st Rally which half a million Hong Kong people protested against the national security legislation. Cheung (2012) outlined Beijing's strategies to domesticate Hong Kong by constitutional, political, social and economic integrations (Appendix 1). Chinese Central People's Government expressly dedicated economic and political resources to restore the national sentiment among Hong Kong youth as to reassemble Hong Kong people's national identity. National Education has been a highlighted session in policy address; HKSAR Government subsidized more secondary students (from 5,000 to 37,000) to participate exchange program with Mainland China; National Education Centre has been set up in 2004 as to strengthen national thought and beliefs among teachers and students (Cheung, 2012). All patriotic and national elements have been instilled and packaged as national education curriculum in 2014 which was finally retracted by an occupation-oriented collective action (details please refer to next session). Chinese Central People's Government intends to solidify the identity of Hong Kong people as 'nested identities' (Brewer, 1999, p.190), i.e. Chinese national identity is superordinate and the regional identity is regarded as a subgroup, as one of her political achievements in Hong Kong (Figure 3):

Figure 3: Nested Identities of Hong Kong People Perceived by CCP Government

However, it seems that there is an unrelenting local identification among Hong Kong youths which was proved by the survey conducted by Undergrad (學苑) operated

under the Student Union of The University of Hong Kong: 62% advocated Hong Kong is a nation, 28% supported Hong Kong should be an independent entity, and 51% and 64% were in favor of independence without Beijing's recognition and with Beijing's recognition respectively (Undergrad, 2015).

Value Articulation and Re-articulation via Collective Actions

Before British colonial government foregrounded the importance of striking identity of Hong Kong people in 1970s, the refugee mentality and its social consequences brimmed over the society. People perceived Hong Kong as a harbor of refuge for pure survival. They did not have to pay any intentions to public affairs, citizen duties and constitutional changes as they assumed that they were not involved in any political and social aspects of this place (Lam, 2012). Concurrently, British colonial government tried to avoid involving Hong Kong people in political issues as to prevent any possible complications on her governance. This perfect interplay between the government and her people diverted the social and political needs to pursing tangible goals: economic development and social stability. In the course of time those became Hong Kong values: Money-making, personal development, individualism, social stability etc. These values were conceptualized as 'Lion Rock Spirit'[1] which underscored the struggle to survive, industrious and stamina, hardworking, without-complaints, money-oriented etc. Howbeit, since the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS) which caused 299 Hong Kong people died, Hong Kong people increased the awareness of public and community cooperation, people's integrity and consciousness of collectivity and they started to embrace post-materialist values which could be well-epitomized in collective actions. 6 crucial collective actions from 2006-2014 in Hong Kong would be further analyzed in the perspective of political and social value articulation.

Cheng (2016) has already summarized characteristics of these 6 collection actions and they are illustrated in Figure 4 (Cheng , 2016, p.11) and Figure 5 (Cheng , 2016, p.13):
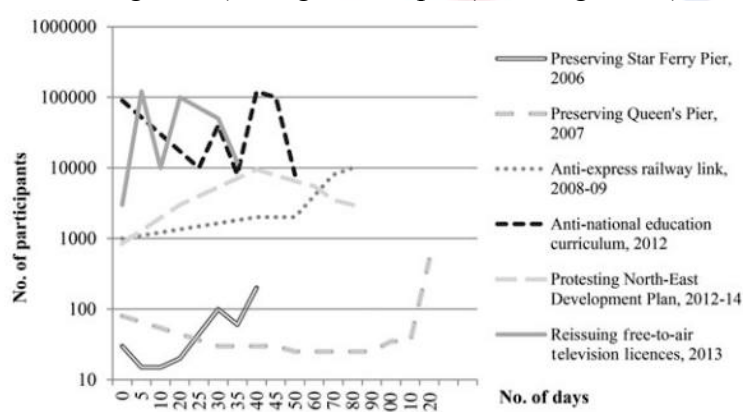
Figure 4: Scale and Resilience of Critical Events in Hong Kong, 2006-2014

Cheng (2016) discovered that there were 19-fold and 14-fold increases in the number of participants in the events during the period of 2006-2010 and 2010-2014

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[1] Note: 'Lion Rock Spirit' was well-illustrated in the lyrics of the theme song from the 1970s TV series 'Under the Lion Rock':
"Of one mind in pursuit of our dream. All discord set aside, with one heart on the same bright quest. Hand in hand to the ends of the earth. Side by side we overcome ills." (Chugani, 2016, April 5)

respectively. Averagely, there were 67 days occurrence of those collective actions, the longest lasted 122 days and the shortest lasted 43 days.

Event	Field performance	Party reaction	State decision
Preserving Star Ferry Pier	*occupation* hunger strike heritage tour	Legco inquiry Unanimous consent	Pier demolished
Preserving Queen's Pier	*occupation* concert heritage tour	Legco inquiry Subcommittee hearing Bipartisan split	Pier demolished
Anti-express railway link	*siege* "prostrating walk" sit-in	"	Railway budget passed; affected village rebuilt
Anti-national education curriculum	*occupation* hunger strike student strike	"	Curriculum retracted
Protesting North-East Development Plan	*siege* blockades bazaar	"	Development zone minimized
Reissuing free-to-air television licence	*occupation* hunger strike satire	"	Licence denied

Figure 5: Details of Critical Events in Hong Kong, 2006-2014

The main repertories were occupation and laying siege to a particular building with symbolic meaning such as Central Government Complex or Legislative Council or the places had to be protected, for example, the pier.

Event	Contrast Values	Value Articulation
Preserving Star Ferry Pier	Development (Individualism) V. Heritage Conservation (Collectivism)	Sense of Belonging
Preserving Queen's Pier	Development (Individualism) V. Heritage Conservation (Collectivism)	Sense of Belonging
Anti-express railway link	Economic Development and Economic Integration V. Communal, Community and Minority Development	Questioned the dominance of China over HK affairs and the money-making philosophy
Anti-national education curriculum	Political Autonomy V. Integration (Intervention) with Mainland China	Questioned the dominance of China over HK affairs and against the imposition of national identity to Hong Kong students
Protesting North-East Development Plan	Economic Development and Economic Integration V. Communal, Community and Minority Development	questioned the dominance of China over HK affairs and the money-making philosophy
Reissuing free-to-air Television license	Transparency V. Backroom Deals	Procedural Fairness

Figure 6: Value Articulation in Critical Events in Hong Kong, 2006-2014

The protestors have unambiguously expressed the rationales and the needs to preserve the historical and symbolic heritages in Hong Kong in both collective actions of preserving Star Ferry Pier and Queen's Pier. People took hunger strike and occupied

the piers as to oppose the demolition of the piers for traffic development (hence, the economic development), as they cherished the collective memories and sense of belonging in Hong Kong. Antipathy always existed when government officials reemphasized any demolitions of Hong Kong heritage as a means to boost economy. The underlining value articulation was advocating collectivism, which did mean a big contrast to the proto-value of Hong Kong, i.e. economic development, money-making and individualism.

In the case of anti-express railway link and protesting north-east development plan, protestors gave utterance to an equitable city development and revitalized communal community in Hong Kong. They were against the sacrifice of small villages, domestic farming industry and the natural environment in the New Territories as to make way for the railway linking Mainland China and Hong Kong and over and above that, the shrouded 'Mainlandization' and cross-boundary interaction were strongly resisted and people were looking for an equilibrium between national and regional economic and social homogenization.

After the anti-national education curriculum occupation in 2012, HKSAR Chief Executive CY Leung announced to defer the commencement of Moral and National Education (MNE) implementation in primary and secondary education after 90,000 people participated in 7.29 Anti-brainwashing Rally and 120,000 people enveloped around Central Government Offices whipped up by a student group Scholarism. This protest unquestionably enhanced the political capital and political efficacy among the activists, thus, triggered more Hong Kong youths to engage in politics and elections. HKSAR government opted to generate political discourse via formal education, aiming at engendering a 'unilateral top-down indoctrination of Chinese nationalism' and reinforced national identity (Chan, 2014, p.27). This imposition of national identity was firmly rejected by teachers' group and students' group such as Parents' Concern and Scholarism (Cheng, 2016, p.11), as education should be the final battlefront of political autonomy against Mainland China.

There was public outcry against HKSAR government denied HKTV a free-to-air television license, though HKTV has proved that it had the potentiality to produce high-quality TV programs. Protestors and Ricky Wong, the president of HKTV, criticized the procedural fairness and interrogated the transparency of the mechanism of licensing. To some extent, protestors concluded that there was political examination or judgement on the whole issuing process as some of the TV programs produced by HKTV criticized HKSAR government and Mainland China government either in direct or indirect way.

Hong Kong people realized the essentiality of post materialistic values and actualized their inclinations through participating in collective actions in the last 10 years. These collective actions signified their ambition to restore the humanity which was oblivious in the past, concurrently, they were eager to replace the friability and the unrepresentativeness in the nowadays Hong Kong's distorted and obstreperous political institutions and situations.

"The Consciousness Evolution": The Significance and the Power of Movement Identity in the Umbrella Movement

The color yellow and umbrella both were the symbolic signifiers of pro-occupiers during the 79-day movement. The significance of color was emanated from the color revolutions during the early 2000 and the umbrellas were used as the-only protection against pepper spray from police at the beginning of the Umbrella Movement (Eagleton, Nov 4, 2014). The representativeness of these "identifiers" (Porta, & Diani, 2006, p.108) did associate with the rationale (The determination towards the injustice and unequal political development in Hong Kong) and the repertoire (Non-violence and civil disobedience originally advocated by Occupy Central with Love and Peace - OCLP Website). People, who supported the occupation movement, would wear a little yellow ribbon on their t-shirts as to manifest their political perspectives and sentiments for the Umbrella Movement even they did not have time to occupy the street during the movement. Those symbols and codes could be regarded as the cultural resources articulating the values and rationales behind the movement and thus formed a new movement identity for the Hong Kong people. They called this identity as "Yellow-Ribbon".

This object-oriented identity was distinctive and identifiable which could be regarded as extremely significant and effective when the "Blue-Ribbon" came to light. Undeniably, the prominence of "Blue-Ribbon" mimicked the movement identity by attaching a contrary colored ribbon as identifier. "Blue-Ribbons" were employed by the pro-establishment camp and coincidently, HKSAR government has supported their action (even included violence) publicly (Law, March 4, 2015). This intention of creating "Blue-Ribbons" was, in reality that some of the Hong Kong people who did not support the occupy movement and to goad on conflicts between the Yellows and the Blues, in order to stir up the Yellows and derail the non-violent track which Yellows originally promoted. By pinpointing the economic sustainability and safeguarding the rule of law in Hong Kong, Blues asserted that the occupation was a hindrance to any economic developments and will affect the tourist industry in Hong Kong. Indeed, "Blue-Ribbons" were tempted to "perform" violently when they intended to have conflict with the "Yellow-Ribbon", and this was a thorough dissimilitude to the value and rationale of "Yellow-Ribbon". The emergence of "Blue-Ribbons", hence, accommodated a political and social context for strengthening the original movement identity and legitimating their further political existence and continuance.

After the Umbrella Movement, the significances and the impacts on the identity formulated from the Umbrella Movement were stretched out. Hong Kong people have undergone an evolution on the cognizance of social and political identification which firstly, they reserved the courageousness to express their political orientation that they have experienced in the Umbrella Movement and secondly, particular identity has replaced the movement identity as to shore up and sustain the ideologies after the movement. Thus, localism has become the main narrative of Hong Kong identity to underscore the protection of local resources, cultures, traditions, core values, social and political system as to oppose any kinds of erosion/intervention from Mainland China. This narrative of localism/local identity provided a more recognizable and salient alternative for the original hybridized identity. Local identity was framed as a new identity as to resist the modus operandi of Mainland China, for instance, the

influx of Mainlanders snapping up necessities, real estates, places in universities (Cheung, 2012) and PRC's game rule has monopolized any possible business opportunity in Hong Kong (Fong, 2014). This new identity was being nurtured and reinforced by the chronic 'mainlandization', the social movement dynamics, political exasperation and long-term indeterminate identity. This new identity narrative was eventually realized, integrated and hammered out in the Umbrella Movement, i.e. experiences and values that gestated the nitty-gritty for the local identity. This local identity is not a newly-discovered identity but a precious one to be protected from any destruction and distortion (Pang, 2016), and with a more salient and solid boundary.
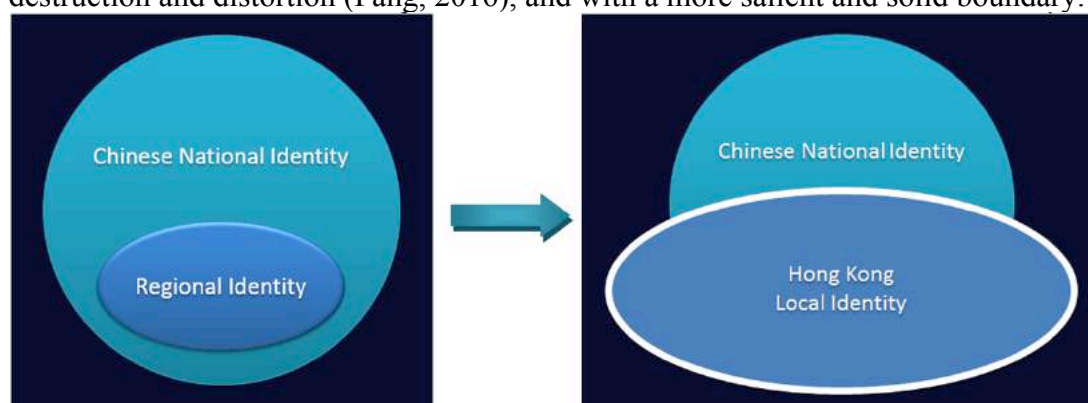
Figure 7: Consolidation: From Nested Identities to Dual Identities by Introducing Hong Kong Local Identity in Hong Kong

The strength and furtherance of local identity could be evidenced by New Territories East by-election on 28 February 2016. Hong Kong Indigenous is a political party established in Jan 2015 and is regarded as radical nativist or 'localist' (Ngo, 2 Feb 2016). The members are mainly post-90s youths and they oppose the increased influence of Mainland China and the Beijing government's involvement in Hong Kong. They always involved in protests and engaged into violent clashes with police such as Mongkok Riot. However, 24-year-old member Edward Leung Tin-kei ran for the New Territories East by-election, unexpectedly Leung got 66,524 votes, about 15 % of the total votes (Wikipedia, 3 August 2016). This better-than-expected result was considered a big boost for the localism ideology they advocated, simultaneously, the result served as the evidence that localism could be a receptive political orientation with high political capital though Leung always involved in public violence.

A survey conducted by Department of Journalism and Communication of The Chinese University of Hong Kong indicated that 36% respondents supported localism among the 5 given choices (Pro-establishment, Pro-democracy, Moderate, Localism, No comments). The respondents claimed that localism could prevent 'mainlandization' (58%) and they already dissatisfied with pro-democracy camp (55%) and admitted that they supported Hong Kong self-governance (52%) (U-beat Magazine, 2016). The elevation of civic capital via establishing civil society under the blossoming of education, participation in social and political affairs and humanity values, Hong Kong people would eager to have further demands on the compatibility of institutional development and hence the further participation in politics including the institutionalized ones, e.g. elections. People questioned against the legitimacy and the accountability of the HKSAR government as she allowed continuous increases of economic, social and political intervention measures raised from Mainland authority which entirely demonstrated the "blurring of physical, social, cultural and

psychological border between Mainland China and Hong Kong" (Ma, 2015, p.47). Those integration measures not only dismantled the imagined boundaries with Mainland in geographical sense and in the political sphere, but also violated the cultural formation of Hong Kong and its original relationship with Mainland (Ip, 2016, p.411). The seed of local consciousness and identity began to sprout as to restore the imaged borderline between Hong Kong and Mainland China socially, culturally, politically and even economically.

"The Consciousness Evolution": Value re-configuration in the society

Ideologies which were upheld in the Umbrella Movement such as morality, responsibility and obligation, localism, shouldering, public interests (Cheng, & Yuen, 2015) veritably stemmed from the series of collective actions which have accumulated the cultural symbols, political consciousness, social spaces, realizations and values for any further possible social movements and kept fermenting in the society. The Umbrella Movement served as a platform to actualize the ideological battle in the society, precisely, the struggle between traditional Hong Kong value or mentality and New Hong Kong value. The Umbrella Movement gave Hong Kong people a chance to experience 'new political community" with 'isonomy' and a 'new social formation' (Pang, 2016, p.184). The new generation was deeply skeptical about The 'Lion Rock Spirit' when Hong Kong was already morphing into a society full of conundrum. The participants in the Umbrella Movement invented 'New Lion Rock Spirit' which did not aim at overthrowing the traditional ones, but by stressing the importance of collectivism, justice, fairness, public interest and local interest would be the antidote for the deadlock situation in Hong Kong, and concomitantly, cherish the local characteristics and being distinguishable with other PRC cities (Pang, 2016). During the Umbrella Movement, The Chinese University of Hong Kong released survey findings to evaluate the public views on Hong Kong's core values.

	Do you agree that this is Hong Kong's core value?	The most important Hong Kong's core value is:
	Strongly Agreed / Agreed	
Rule of law	92.7%	(1) 22.9%
Just and corruption-free	92.3%	(3) 15.3%
Social stability	88.2%	
Freedom	88.1%	(2) 20.8%
Peace and benevolence	87.4%	
Safeguard individual property	86.5%	
Level playing field	86.3%	
Family	84.3%	
Democracy	83.2%	(4) 11.1%
Diversity and tolerance	79.8%	
Market economy	76.5%	

Figure 8: Hong Kong's Core Values Survey (Hong Kong Institute of Asia-Pacific Studies, CUHK, October 30, 2014)

Within 11 randomly chosen HK's core values, over 90% of the 804 respondents strongly agreed or agreed that 'rule of law' (92.7%) and 'just and corruption-free' (92.3%) were the core values of Hong Kong. A portion of respondents declared that the most important Hong Kong's core values were 'rule of law' (22.9%), 'freedom' (20.8%) 'just and corruption-free' (15.3%) and 'democracy' (11.1%). This survey served as a barometer to reflect what Hong Kong people care, need and desire, hence, there is glaring contradiction to the ideology of Chinese Communist Party (CCP) and the actuality of CCP authority: Rule of man, not free (Freedom House, 2016), corrupted[2] and authoritarianism. The promotion of 'New Lion Rock Spirit' could be the most legitimate and efficacious resistance to further be sinicized by Mainland China. Firstly, money-making mentality would be utilized by China to exert political and social intervention under the name of 'mutual economic development'. Moreover, Hong Kong hitherto is a significant international economic and financial center which implies the economic and social system of Hong Kong is legitimized internationally. Freedom of press, freedom of speech, independent judicial system, institutionalized anti-corruption mechanism etc. could not be sacrificed as they are essential pillars of maintaining international status. For instance, the shrinking of freedom of press in Hong Kong is still significant[3]. Justice, fairness, public and local interest as well as procedural transparency would be the sacrosanct values to safeguard Hong Kong's international reputation and assimilation from CCP authority.

Conclusion

It was inescapable that there would be instability and inconsistency in the society if the political institutions are incongruent with the political culture in the society (Almond, & Verba, 1989, p.20).Through a series of collective actions, political capital has been stockpiled within the civil society and the percipience of improving the society has been realized among Hong Kong people. The Umbrella Movement brought forth a reality that Hong Kong had to resuscitate a new identity narrative with new value articulation, as to dovetail with the over-integrated political and social circumstance in Hong Kong. This new narrative – the local identity and the 'New Lion Rock Spirit' would reinforce each other if further 'Mainlandization' and continuous degradation on Hong Kong local interest emerge.

Further Remark
A Lever Game: Democracy V. Identity V. Intervention

Renowned scholar Larry Diamond has reviewed the readiness for democracy in Hong Kong by taking 3 conditions to be considered: The condition for sustaining democracy, the political culture of the society, the power relations outside the

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[2] According the Corruption Perception Index 2015, China ranked 83 while Hong Kong ranked 18 among 186 countries and territories. A country or territory's score indicates the perceived level of public sector corruption on a scale of 0 (highly corrupt) to 100 (very clean) (Transparency International, 2015).
[3] Refer to 2016 World Press Freedom Index, Hong Kong ranked 69 among 180 countries and territories. Report clearly mentioned that 'The media are still able to cover sensitive stories involving the local government and Mainland China, but the need to fight to protect their editorial positions from Beijing's influence is increasingly noticeable. The purchase of Hong Kong media by Chinese Internet companies such as the Internet giant Alibaba is extremely disturbing. The most outspoken journalists, such as those working for the Apple Daily newspaper, are exposed to violence by the Chinese Communist Party's henchmen.' (Reporters without Borders, 2016)

system's control will permit it to become a democracy (Diamond, 2016, p.335). Diamond argued that Hong Kong was ready for democracy but the only constraint was from Beijing which "framed and interpreted the conditions and it said HKSAR was still not yet ready" (p.335, & p.340). After the handover in 1997, Hong Kong has inescapably joined the lever game with Mainland China. This stalemate between democracy in Hong Kong, the identity of Hong Kong people and China's intervention would be expectedly enduring if China insists on intervening Hong Kong without self-constraint or without reviewing the social and political reality in Hong Kong. The local identity in Hong Kong would gradually be expanded, solidified and espoused through further engaging in social movements, local politics and civil society as firstly, the endeavor to pursue democracy in Hong Kong would never exterminate and secondly, the unceasing intervention from Mainland would finally reach (or already reached) the bottom-line of Hong Kong people.

Appendix 1 (Cheung, 2012, p.327-328):

Beijing's strategy toward Hong Kong after 2003 has the following key elements:

- Emphasizing its constitutional authority and exercising its influence in directing the path of Hong Kong's political development;
- Shaping Hong Kong's governance through a variety of control mechanisms;
- Displaying pragmatism in dealing with the pro-democracy forces over constitutional reform in order to achieve compromise while dividing up such opponents;
- Expanding the united front and political support network in favor of the Mainland, including the grooming of the second generation of Hong Kong's tycoons and elites as political players;
- Prompting the HKSAR government to promote patriotism and national education; and
- Supporting Hong Kong's economic integration with the Mainland economy in order to ensure its prosperity and reduce social and economic discontents, especially when the Taiwan question is still not resolved.

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Mobile Phones Use in an Arab Context: Blending Modernity and Tradition

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Abstract
This exploratory study examines Arab college student use of mobile phones, and investigates the impact of mobile telephony on family structure, friendship, and face-to-face communication. The study utilizes the uses and gratifications theory as a theoretical framework, and employs a survey instrument to get answers from college students (N=303) to its research questions. The study found that the majority of the respondents used mobile phones to communicate with parents, relatives, and friends. They also used their mobile phones for coordinating activities and texting. The respondents reported that the mobile phones help them in emergency situations, but they did not emphatically stressed safety as an overriding concern. Underscoring the importance of face-to-face communication, the respondents did think a mobile phone substantially reduces their visits to their relatives or friends. They also did not consider using a mobile in public places a major disturbance. The respondents also did think that a mobile phone distracts a user from studying or driving. The study found that the majority of the respondents spent than two hours per day using various features of mobile phones including camera, video, texting, and the Internet. By critically appraising the use and perception of mobile telephony, the study concludes that college students, in an Arab context, appropriated mobile phone in various ways to suit their daily lives and serve their cultural needs.

Keywords: Mobile phones; telephone communication; SMS; New Communication Technologies

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Introduction

The purpose of this study is to examine how college students in an Arab Islamic context perceive and use their mobile phones. Informed by previous research on the use of mobile telephony, this study investigates how a mobile phone is appropriated to serve family relations, friendship, and face-to-face communication. Extant research exists on the use of mobile phones in various parts of the world (Katz, 2008; Ling, 2008; Campbell, 2007; Castells et al., 20007; Leonardi et al., 2006). Yet, very few studies have dealt with the use of mobile telephony in the Arab world. For example, one study suggests that, at the microlevel, the mobile phone will lead to substantial change in identity construction in the Arab world (Kriem, 2009), leading to more individualism. Another study highlighting the macro-level, argues that the mobile phone will lead to dramatic political change in the Arab world, opening the door for more democratization (Ilbahrine, 2008).

The scarce literature on the use of mobile phones in the Arab world refers to numerous difficulties arising from adopting mobile phones in a conservative culture (Mishkas, 2004; Al-Zamie, 2001; Fareed, 2003). Previous studies did not deal in-depth with the younger generation's use of the mobile phone. They were also not carried out in the United Arab Emirates (UAE), which represents a mosaic of multicultural societies. Known for its luxurious shopping centers, the tallest building in the world (Burj Khalifa), and hospitality, the UAE is one of the most wired societies in the world. This makes young men and women's appropriation of mobile phones in this country intriguing. By focusing exclusively on college students, this empirical study fills a gap in literature dealing with mobile phone use in the Arab world.

Utilizing the uses and gratification theory as a conceptual framework, this study explores how young men and women in the UAE perceive and use their mobile phones. The study relied on a nonrandom sample consisting of students of private university. Because it aims at making a scholarly contribution to the field of mobile telephony, the study asked similar questions used by similar studies investigating the use of mobile phones in other parts of the world. A survey instrument helped in gleaning information from the respondents. The findings were interpreted in relations to the findings reported from other cultural contexts.

Uses and gratification

The uses and gratification theory focuses on how individuals use media to gratify personal needs, and emphasizes individual differences during the process of media uses and effects (Rosengren, 1974). It's a theoretical framework typically researching media effects (Katz, Blumler, & Gurevitch, 1974; Rubin 1983, 1994). It can be viewed as a psychological communication perspective examining how individual use mass media and other forms of communication such as interpersonal communication to satisfy cognitive and affective needs (Rubin, 2002).

Kayahara and Wellman (2007) identified two categories of uses and gratifications: process and content. Process deals with media users' activities, whereas content results from acquiring information (Kayahara & Wellman, 2007). These needs include the need for personal identity, escape, and self-presentation. Stafford and Gonier (2004) have identified several gratifications from the Internet use that motivate users' behaviors. These include web searching, the acquisition of information, the ability to engage in interpersonal communication, and socialization.

Extant research based on the uses and gratifications approach has been extensively applied to a variety of mass media and new communication technologies, including the VCR (Cohen, Levy, & Golden, 1988; Rubin & Bantz, 1989), cable television (Bantz, 1982), online bulletin boards (James, Wotring, & Forrest, 1995; Rafaeli, 1986), and the Internet (Ferguson & Perse, 2000; Papacharissi & Rubin, 2000; Miller, 1996). Studies employing uses and gratification approach research on new media are also flourishing (Dimick, Kline & Stafford 2000, Leung & Wei 2000; Trepte et al. 2003; Peters & ben Allouch, 2005; Wei 2006).

Literature Review

A mobile phone can be used in multi-faceted ways for the best or the worst of the society. Mobile phones can be used to sustain justice or spread crime (Uranaka, 2005). They can also be used for targeting enemies (Gaudin, 2001), or coordinating humanitarian relief. During the Tsunami disaster, mobile phones became instrumental in conveying vital information and coordination relief activities (Robinson & Robinson, 2006).

Rheingold (2002) predicted that the development of mobile technology would result in a "social revolution," which links the world by networks leading a reshuffle in existing social hierarchy and power structures. But, Winston (1998) refers to the "law of suppression" and suggests that social contexts are capable of creating "sufficiently amenable conditions" to promote the adoption and integration of new information and communication technologies (ICTs) in established social systems without adverse effects. Increased penetration of mobile telephony made mobile communication an integral part of many consumers' daily lives throughout the world (Castells et al. 2007). In December 2008, the International Telecommunication Union (ITU) reported that the milestone of 4 billion mobile subscriptions was achieved (ITU, 2008, p. 40)

Katz (2006) argues that sometimes technologies can help strengthen patterns counter to modernism, adding that "the technologies themselves get remade and customized by users creating yet new patterns and applications"(p. 182). He adds that "Paradoxically, the very technologies enabled by empiricism and skepticism are used to advance mindsets that are often hostile to science and technology"(Katz, 2006, p. 183). Katz concludes that "mobile devices "extend and enrich, rather than supplant, identity creation and displays already underway through other processes and items"(p. 183).

Mobile telephony research is flourishing (Castells et al. 2007; Ishii, 2006; Ito et al., 2005; Ling, 2004, 2006; Fortunati et al., 2003; Katz and Aakhus, 2002; Katz, 2003, 2006, 2008). Yet, many of mobile phone studies are exploratory in nature (Kriem, 2009; Maroon, 2006; Ingelbrecht & Trivedi, 2004; Rice & Katz, 2003; Taylor & Harper, 2001).

Globally, cultural variations exit in perception and use of mobile phones. Katz and Aakhus (2002) studied the use of mobile phones in United States, France, Finland, Bulgaria, and Korea, and referred a trend toward " conformity and uniformity" (pp. 313-314). Caporael and Xie (2003) studied mobile phone use and found cultural similarities in use among American and Chinese participants. Whereas, the Dutch regard mobile phone as necessity (Beckers et al., 2003), the Koreans consider it as expensive and stylish (Katz et al., 2003). In Italy and France mobile phones are adopted for personal reasons unrelated to work.).

Katz and Aakhus (2002) argue that mobiles are used as interpersonal communication devices in a similar way in the USA, Korea and a number of European countries. Moreover, they argue that there is a universal drive towards perpetual contact; that people from different cultures share a spirit that guides their interest in the adoption and use of mobiles. At the same time, yet, the literature underscores cultural differences in usage (Campbell, 2007; Sundqvist et al., 2005; Oksman & Rautiainen, 2003). Fortunanti (2002) reports significant differences in using mobile phones for social relationships. But, Mante (2002) finds little differences in mobile phone use between the United States and Netherlands.

Mobile telephony is used in many parts of the world for various reasons. A number of studies emphasize varying theories of social interaction (Geser, 2003; McGuigan, 2005; Srivastava, 2005), personal identity (Pertierra, 2005; Garcia-Montes et al, 2006), cultural identity (Horst & Miller, 2006), economic viability (Rouvinen, 2005), instrumental and working practices (Hurme, 2005) and social space (Gordon, 2006; Rosen, 2004).

A number of studies concluded that safety as a primary reason for adopting a mobile phone (Ling, 2008; Leonardi et al., 2006; Katz, 2006). Ling (2008) suggests that mobile phone extend reach of parents as well as children and friends. The issue of security and safety becomes vital for parents who want to know the whereabouts of their children (Green, 2002b; Roos, 1993). This perpetual monitoring can be seen as "parental panopticon." But, the same device used to ensure safety of its user can be a curse if not used appropriately.

Mobile phones are used for expanding bonds with families and neighbors in Taiwan (Wei & Lo, 2006; Kriem, 2009). According to Smoreda and Thomas (2001) mobile phones are used to foster relationships within friendship circles. Similar uses existed between friends in Japan (Matsuda, 2005). Mobile phones strengthen family bonds (Wei & Lo, 2006), facilitate friendships (Ishii, 2006), and build mutual support (Campbell & Kelley, 2006; Ling, 2008). Yet, Horst and Miller (2005) argue that the

mobile phone is used for establishing contacts outside the in-group

Young people coordinate their activities through mobile phones (Ling & Yttri, 2002; Ling, 2008). According to Katz (2006), people use mobile phone to redo schedules and alter plans for the purpose of coordination with others (p. 179). Mobile devices are used as interpersonal communication devices, facilitating the sharing of information and the coordinating daily activities with family, friends and colleagues (Bolin, 2008; Bolin & Westlund, 2009; Ling, 2004; Westlund, 2007).

One of the downsides of using mobile phones is the distraction they cause users and people around them (Licoppe & Heurtin 2001; Ling, 2004; 2008). A number of scholars reflected on the deleterious effects of mobile phone on education, particularly texting during classes. Texting students can be present in classroom, but their minds are not (Maroon, 2006, p. 13; Katz, 2006, p. 99). Although mobile phones are used by religious groups to sustain and spread their faith, the same mobile phones cause distraction in worship places (Ilkonetel, 2004). Worships from various denominations (Jews, Christians, Muslims) complained that mobile phone ringing cause disturbance during prayer time (Al-Zamie, 2001).

Commuters using public transportation in many places around the world face the problem of having to listen to a mobile phone user discussing his/her private activities in public. In many places around the world, some mobile phone "users are willing to sacrifice considerations about the comity and civility of public space in order to indulge their own private pleasures of personal communication" (Katz, 2006, p.177). Ling (2008) cited interviews asserting that using mobile phone while driving is hazardous (pp. 178). According to Leonardi et al. (2006), following some fatal accidents some countries enacted laws prohibiting using a mobile phone while driving. Maroon (2006) argues that laws against use of handheld cell phones by automobile drivers are justifiable. Some concerns are more tangible, as for example, concerns over driving and mobiles. Some countries, including Japan, Australia, United States, and United Kingdom, and recently UAE, have introduced legislation governing the use of mobile phones by users while driving motor vehicle. A survey in United States stated that 71% of the respondents said that they can drive safely while talking on the cell phone; 28% answered yes, that sometimes they could not drive safely when talking on the cell phone (Schulman et al., 2006).

Some scholars argue that digital technologies including mobile telephony are diverting individuals away from participating in public sphere (Wolak et al., 2003; Bugeja, 2005; McPherson, 2006; Gergen, 2008). On the other hand, some scholars assert that new communication technologies nurture new forms of associations (Kavanaugh & Patterson, 2001; Katz & Rice, 2002; Boase et al., 2006). Ling (2008) refers to a middle ground between the strong ties of the "clique" and the weak ties of the marginally known (p. 176). He argues that mobile communication help in forging "the links of friendships and solidarity that can be seen as social cohesion"(2008, p. 175).

Reaffirming notion of "perpetual contact" (Katz & Aakhus, 2002), Licoppe (2004) asserts that mobile phones facilitate social cohesion. They foster mediated interaction (Campbell & Russo, 2003; Haddon, 2005). Arminen (2007) argues that mobile phone mediated ritual sustains social cohesion. Hargittai (2007) argues that members of online communities mirror people's "social networks in their everyday lives". That means one's friends and relatives with whom one has face-to-face contacts are the same people one's as online friends. The mobile phone may not be effective in maintaining weak-tie relationships, yet it has a relative advantage compared to other mediated communication for sustaining strong-tie relationships (Miyata, 2006). Ling (2008) describes mobile phone as a facilitator for "connected presence…. leading to tighter integration of the groups" (Ling, 2008, pp. 172-173).

According to Castells et al. (2004), texting is a catalyst for constructing and reinforcing peer groups. A slew of studies on mobile phone use in United States (Campbell & Kwak, 2007), Europe (Smoreda & Thomas, 2001), Japan (Igarashi et al., 2005; Ishii, 2006), Norway (Ling, 2008), and Philippines (Leonardi et al., 2006) suggest that text messaging is used to link disparate friends and foster relationships.

The internet is used to extend existing social networks and establish new relationships (Baym et al., 2004; Thurlow and McKay, 2003). Oksman and Turtiainen (2004) assert that prolific mobile phone users sustain existing social networks and embark on creating new relationships. For Finnish teenagers, use is important in the establishment of new relationships (Oksman & Turtiainen, 2004). But, in developing countries this becomes impractical for lack of financial resources (Sooryamoorthy et al., 2008).

Mobile telephony in the UAE

According to ESCWA (2006), "The UAE also boasts one of the highest rates of mobile line distribution in the ESCWA region with 5,519,000 subscribers in 2006, compared with 4,534,000 in 2005" (ESCWA, 2007, p. 5). A report prepared by Madar Research Group and Orient Planet (2009), states that the UAE achieved a 42.61 per cent growth in mobile phone subscriptions in 2007 while mobile phone penetration rate rose to 131.64 per cent, the highest in the Arab World in 2007, up from 124.52 per cent in 2006 at a compounded annual growth rate of 27.57 per cent between 2003 to 2007 period (*Gulf News*, 2009a).

The Global Information Technology Report indicated that the UAE moved up two places from the number 29 position it held in last year's WEF report to reach a commendable 27 rank in this year's 2008-2009 index (itp.net, 2009). Dutta (2009), one of the co-authors of the report, argues, "The e-government initiatives of the UAE and its overall investment in the ICT sector have been recognized as the drivers for the country's leading position among its Middle Eastern peer economies." The International Telecommunication Union (ITU) statistics states that the mobile penetration in the UAE has reached 93% by February, 2009 (ICT stat.). But as conceptualized by a number of scholars (van Dijk, 2005; van Dijk & Hacker 2003),

physical or material access alone is too simplistic as a measure. Relying on subscription rates alone is problematic because the correlation between access and use is likely to be greater in developed countries than in developing countries (James, 2004).

Research Questions

RQ 1: What are the uses and perceptions of mobile phone among a sample of mobile phone users in a   private Gulf Arab state private university?

RQ 2: To what extent does mobile phone use affect face-to-face communication?

RQ 3: Do gender and age lead to different uses and perceptions of the mobile phone among participants?

RQ 4: How many hours per day do participants spend using various features of their mobile phones?

RQ 5: Are uses and perceptions of mobile among youth in an Arab context comparable to their peers' uses and perceptions in other countries?

Method

Participants

The study took place in a mid-sized private university in an Arab Gulf state, where 303 students volunteered to complete an online survey. The non-random sample consisted of 177 females (58%) and 66 males (42%). These variations in gender distribution represent a normative male-female ratio in most Gulf States Council (GCC) countries. The mean age of respondent was 20 years. Students whose age was above 25 years (N=6) were removed from the sample. All participants were undergraduates: Freshmen, 15% , Sophomores 25%, Juniors 24%, and Seniors 36%. The participants were from four colleges: Business and management 34%, Engineering 29%, Arts and Sciences 27%, and Architecture, art and design 9%.

Instrument

A self-report survey containing asked 63 questions pertaining to the use and perceptions of mobile telephony. Thirty-seven questions were used in this study and the rest was used for another investigation. Some factors in this study focus on use of mobile phone in lieu of face to face communication. Additional factors examined in this study (i.e. mobile phone use in public places, safety/security, instrumental as well as expressive use) were derived from an instrument developed and used by Campbell and Russo (2003). The study includes questions on the use of mobile phones while driving because death rate and injuries resulting from car accidents are relatively high in the United Arab Emirates (UAE). For items measuring uses of mobile telephony, the participants were asked to respond using a 6-point Likert-type scale, with response options ranging from "Strongly agree" to "Strongly disagree." For items assessing hours of use, the survey asked respondents the time they spend using their mobile phones for voice, texting, camera, video, and mobile television.

Procedure

After securing a permission from the university's office of institutional research, the researcher distributed and tested the survey for readability before posting it online. The survey informed the respondents that participation was voluntary entailing neither an incentive nor a penalty. The survey took approximately 13 to 15 minutes to complete. Participation in the survey was voluntary involving neither incentive nor punishment. The participants were also informed that their responses will remain anonymous and confidential.

After data collection, a principal components factor analysis was conducted with varimax rotation for the 35 items assessing uses and perceptions of mobile phones. The criteria for loading on a factor were: a factor loading of at least 0.50; maximum loading of a secondary factor no more than 0.40; and an eigenvalue greater than 1.00. Five items were removed from the analysis for failing to meet these criteria. The 30 remaining items resulted in ten interpretable factors for uses and perceptions of mobile telephones.

Three items loaded highly on the first factor, with two item loading 0.85 and the third item 0.80. These items reflect the use of mobile phone for online communication including using e-mail, sharing information, and using social media networks. The factor was labeled 'mobile Internet'. Survey items assessing this factor include: "My mobile phone helps me seek or share information on the Internet", "My mobile phone allows me to send or receive email messages", "My mobile phone helps me participate in online social networks (Facebook, Twitter, MySpace, blogs)".

One item loaded very high 0.81, two items loaded 0.70, and one item 0.67 on the second factor. These items deal with using mobile phones as fashion statement. Thus, these items were named "fashion". Survey questions assessing this factor include "If I buy a new expensive and fashionable mobile phone it adds to my prestige", I believe that I am satisfied with the attention I get when showing my mobile phone to my friends", "I feel embarrassed when I see others using better mobile phones compared to my mobile phone", and "A mobile phone is a status symbol".

Two items loaded above 0.73 and one item above 0.61 on the third factor. These items were named 'shopping' because mobile phones are used as instruments for shopping and gathering information about goods and services. Survey items related to this factor include: "My mobile phone helps me in shopping", "My mobile helps me use my time efficiently", My mobile helps me seek information about products and services", "My mobile phone allows me to multitask", "I use my mobile phone for educational purposes."

Two items loaded above 0.77 and one item above 0.66 on the fourth factor. The items on this factor was labeled 'entertainment' because they reflect the use of mobile phone as entertainment instruments to overcome boredom. The following survey questions illustrate this factor: "My mobile phone helps me to pass time when I feel bored", "My mobile phone provides me with entertainment", "I use my mobile phone for entertainment".

Two items loaded above 0.65 on the fifth factor. They were labeled 'instrumental use' because they assess mobile phone use coordinating activities and knowing what is happening to other people. Survey items representing 'instrumental use' include: "My mobile phone helps find the exact location of people that I want to meet", "My mobile phone helps me know what is happing to people who I know".

Two items loaded above 0.75, and one item above 0.66 on the six factor. These items were named 'distraction' because they highlight the distraction that mobile phones cause to users while driving, studying, or spending time with families. The following survey items represent 'distraction': "My mobile phone distracts me when I am studying", "My mobile phone distract me when I am driving", "My mobile phone distracts me when I am with my family members/friends".

Three item loaded above 0.67 on the seventh factor. These items were named 'expressive use' because they assess mobile phone use to communicate with immediate family members, relatives, and friends. Survey items representing this factor include: "My mobile phone helps me communicate with my parents, brothers, and sisters", "My mobile phone helps me keep in touch with members of my extended family (relatives)", "My mobile phone helps me keep in touch with my friends".

Two items loaded above 0.63, and one item above .050 on the eighths factor. This factor is designated 'security/safety' because it illustrates mobile phone use for providing users with a sense of security. Survey items reflecting this factor include: "My mobile phone keeps my family from worrying about me", "My mobile phone helps me as for help when I am in an emergency situation", "My mobile phone gives me a sense of security".

Two items loaded higher than 0.69 and one item loaded above 0.50 on the ninth factor. This factor was labeled 'mediated communication' because they reflect the use of mobile phone to reduce visits to family members and friends as well as using SMS message to avoid the embarrassment of face-to-face communication. Survey items illustrating 'mediated communication' include: "My mobile phone helps me reduce my visits to my friends", "My mobile phone helps me reduce my visits to my relatives", "I use my mobile phone SMS to avoid the embarrassment of face-to-face communication".

One item loaded at 0.66 on the tenth factor. It is named "public space", because it deals with the use of mobile phones in public places. One questions exploring mobile phone use in public places is "I think speaking on a mobile phone in public places (e.g. theatres, meetings) disturb other people". Table 1 illustrates factor eigenvalues, Cronbach's alpha and descriptive statistics for each factor.

Table 1 about here

Table 1: Factor eigenvalues, scale reliabilities and summary statistics

Factor	Eigenvalue	Alpha	M	SD	Range
Expressive use	5.07	.72	2.30	3.25	1.95-2.39
Fashion	3.25	.79	13.7	5.1	1.00-500
Instrumental use	1.71	.74	2.71	3.42	2.50-3.20
Distraction	1,54	.77	2.79	3.74	2.71-2.87
Safety/security	1.30	.62	1.73	2.18	1.64-1.86
Public use	1.10	.16	2.23	1.40	1.00-500

Findings

An analysis of variance (ANOVA) was conducted for each of the dependent variables (expressive use, instrumental use, fashion, safety/security, public use, and mediated communication) to assess the influence of each of the independent variables (age, gender, college, and year in college). A Bonferroni procedure was used to protect against type 1 error, so each ANOVA was tested at the 0.01 level. With regard gender, a one-way ANOVA on safety/security use of mobile phones was significant $(F_{(1,301)}=8.0, p=.005)$. With regard, to age, a one-way ANOVA on expressive use of mobile phones, namely keeping "in touch with my friends", was significant $(F_{(14,294)}=2.227, p=.007)$. The ANOVA for instrumental use, namely coordination and finding "location" of people $(F_{(14,294)}= 1,83, p=0.034)$ was not significant. This partially answers RQ1, and RQ3. Also, a one-way ANOVA on mediated communication, namely "use of SMS to avoid the embarrassment of face-to-face communication", was significant $(F_{(1, 301)}=8.33, p=.004)$. This answers RQ 2.

A factorial MANOVA Box's Test for homogeneity of dispersion matrices was conducted to determine whether the variances and covariances among the dependent variables were the same for all levels of factors. The results Box's Test for College was statistically significant $(F_{(2460,98833.5)}=1.26, p<0.000)$. Moreover, Year in College was also significant $(F_{(1640,165804.1)}=1.21, p<0.000)$ suggesting that there were differences in the matrices and that the assumption of homogeneity of variance was violated for two independent variables.

An analysis of time spent on mobile phones show some statistically significant differences across age, gender, college, and level in college. Although there was no significant ANOVA difference in time spent using voice, text, camera, video, Internet, and television, Levene's test of homogeneity of variance is significant $(p<0.002)$ for hours spent using mobile phones cameras. For item dealing with time spent on texting, there is statistically significant difference between the College of Arts and Sciences (M=3.5, SD=1.99) and the College of Engineering (M=4.4, SD=1.55). The Post Hoc Test demonstrates that significance. Tuckey HSD is significant $(p<0.004)$ between the College of Arts and Sciences and the College of Engineering. This answers RQ4.

There was only one statistically significant difference (p<0.02) between juniors and seniors in time spent using videos. Gender also exhibited a statistically significant difference (M=3.7, SD=1.8, p<0.003) in time spent on texting. This partially answers RQ2.

Table 2: about here

Table 2: Descriptive statistics of mobile phones' features use: hours per day

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Voice	303	5	1	6	3.75	1.709
Texting	301	5	1	6	3.96	1.812
Camera	303	5	1	6	5.26	1.290
Video	303	5	1	6	5.47	1.127
Internet	303	5	1	6	4.36	1.810
Television	303	5	1	6	5.53	1.156
Valid N (listwise)	301					

Discussion

The respondents reported that their mobile phones help them communicate with their friends more than their family members. This information indicates that communicating with members of the family is not necessarily adversely affected by the advent of mobile telephony. With regard to security and seeking help in emergency situations, it wasn't a surprise to see significant differences between female and male students. But, female and male respondents don't differ substantially in using their mobile phones to build social networks. In this regard, these findings are to some extent similar to college students' of mobile phones in other countries (Becker & Hanley, 2008; Campbell, 2007).

Some scholars argue that new communication technologies including mobile phones can lead to individualism in collectivistic societies. Maroon (2006) argued that in Morocco, "Utilizing mobile phones as pathways to anonymity, mobility, and individualism allows greater opportunity for transgressing moralized social roles"(p. 189). The findings of this study do not corroborate that argument. The respondents did not think that using a mobile phone reduced their visits to the members of their extended families. The items dealing with "e-mediated interpersonal communication" is significant. This finding supports Maroon's (2006) assertion that in Morocco, "the mobile phone does not in any manner replace face-to-face encounters as the pivotal form of socialization"(p. 200).

Although the percentage of the students who think security is not a big problem is relatively small compared that expressed their peers in some Western countries, the use of the mobile phone kept their parents from worrying about the safety of their children. This can be attributed to the cultivation effect and the "mean world"

syndrome portrayed in the U.S. mass media channels (Gerbner & Gross, 1976).

The respondents did not think the mobile phone distracts them from studying despite existing literature indicating its deleterious use in classrooms (Katz, 2008). It's interesting to note that these young respondents did not consider using a mobile phone while driving a distraction, despite the considerable volume of traffic accidents in the UAE. But, the respondents' views are similar to those expressed by respondents in the United States (Schulman et al., 2006). Mobile phones are also helpful in multitasking (Pan, 2004; Pendlton, 2004). About half of the respondents strongly and moderately agree that their mobile phones help them in multitasking.

Many of the findings of this study corroborate the findings of previous studies, particularly the most pervasive utilitarian uses of mobile phones (Campbell & Kwak (2007). Keeping in touch with family and friends, coordinating daily activities, and feeling safe and secure in emergency situations are the most pronounced reasons for using mobile phones. Sustaining relationships with relatives is explicitly propagated by Islam, particularly the Holy *Quran* as well as *Hadith* (Prophet Mohammed teachings). Relationship with kin is called *Silatu al-Rahm* in Arabic language. Muslims use mobile phones to foster these bonds of kinship. Kriem (2009) described using mobile phone in this context as "mediated *silatu rahim*." Because one family can ask another family member to convey his/her greetings verbally to a third family member without using a mobile phone can rightly be described as "mediated *silatu rahim*", using a mobile phone, to mediate such an interaction can be accurately described as an "e-mediated *silatu rahm*."

With regard to time spent on using various features of smart phones, texting (F(1,299)= 9.29, p=0.003) was significant. But, this finding does mean that there is strong similarity between across age and gender groups in time spent on other mobile phone's features (camera, video, television). A closer examination of the findings indicates that although the differences between juniors and seniors in time spent on mobile video (p<0.02), and between sophomores and seniors on mobile television (p<0.014), were statistically significant, but they approached significance and would have been so had a Bonferroni procedure not been applied..

Miscalling is widely used in many parts of the developing world (Donner, 2005). It can be described as a form of nonverbal communication, because the source of the message and the recipient have a common code conveying a specific meaning. But the mobile phone can also create some problems for its users. For a reason or another, a mobile phone user may not be able to respond to an incoming call. Being perpetually accessible cause the call receiver to face the problem of "having to explain why… [he/she didn't] want to talk"(Levinson, 2006, p. 15). Kriem (2009) argues that the use of mobile phone in Morocco could lead to significant changes in "identity construction."

Katz (2008) articulately reasoned that mobile phones enrich and extend what is existing rather than supplant it. Thus, the mobile phone can be necessary, but not sufficient for a social change. Social change results from an interaction of various

interlocking socio-economic factors. Mobile telephony can be seen as part of the nexus of these contributing factors influencing social change. Whereas 55% of respondents spent from one to three hours per day using voice, about 60% of them spent the same amount of time on texting. Time spent on visuals by far exceeds time spent on audio or texting. About 80% of respondents spent from one to two hours on using camera, whereas 85% of them spent the same amount of time on using videos. The majority of the respondents spent from one to two hours per day on the Internet. This finding and the problems it entails resonates with similar phenomena in other societies (Jordan et al., 2007). Yet, Livingstone and Helsper (2007) argue, "as older teens expand their social lives, time spent online [or with other digital media] is displaced by time spent on other activities"(p. 686).

Conclusion

The study found that the majority of the respondents used mobile phones for communicating with family members and friends, coordinating activities, and using of camera, video, and texting. Although the respondents reported that the mobile phone can help them in emergency situations, they did not consider security as a major concern. This can be attributed to the scarcity of violent crimes in the UAE. The respondents did not resent being disturbed by others talking on their mobile phones in public places. They also did not think that a mobile phone causes a serious distraction when one is studying or driving. Although it is widely believed in a number of Arab countries that mobile phones could undermine the structure of extended family and make personal contacts more impersonal, the findings of this study proved otherwise. The findings suggest that the structure of the extended family seems to remain stable, and new communication technologies, including mobile phones, are appropriated to sustain its structure.

Mobile phone usage does not necessarily diminish the intimacy of face-to-face communication. The majority of the respondents spent from one to two hours per day using mobile phones' features, including camera, video, texting, and the Internet. The study suggests that the respondents appropriated mobile phone to serve their purposes and satisfy their needs. It can be argued that Arab culture is instrumental in shaping the use and perception of mobile telephony. Thus, one should not expect a dramatic social change resulting from using mobile phones. New communication technologies, including mobile phones, can facilitate social change, but they can hardly be its major driver. Socio-economic change is incremental and occurs within a nexus of other interconnected factors. Thus, the use of the mobile phone can be a necessary, yet, not a sufficient cause for social change.

This exploratory study does not claim that its findings represent all college students, much less college students in the UAE. Using a purposive sample of student mobile phone users precludes generalizing the findings to other non-surveyed publics. Future research can focus on exploring the impact of the mobile phone on its users' communication behaviors.

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Complementarity between Human Capital and Research and Development Activities

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Abstract

National Innovation System (NIS) approach specifically focuses on the interactions among the components of system as the basic dynamics of innovation process. Thus, there is a complementarity between the components of system which arises from the interactions among them as the most significant factor effecting innovation performance of whole system. The aim of this study is to examine the complementarity between Human Capital and Research and Development (R&D) activities in NIS. Using Canonical Correlation Analysis method, we calculate the interactions among the set of variables related to Human Capital and R&D activities within the European countries. Empirical findings indicate that there is a significant interaction between components of Human Capital and R&D. As argued by NIS approach, these two dimensions are linked together by a set of two-way dynamic relationships. Thus, deeper understanding of the impact of R&D on innovation performance needs combined analysis getting R&D and Human Capital together. The most important policy implication of the results is that policies focusing to enhance only one component of system are not enough to improve innovation performance since there is a complementarity among components of NIS. For example, innovation policies like European Union aiming to increase R&D-to-GDP ratio to certain level is not enough without systemic design of other factors related to Human Capital.

Keywords: National Innovation System, Research and Development, Human Capital.

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Introduction

During the last decades, a number of studies have investigated that innovative capability of nations are closely related to their economic performance. Accordingly, scholars in the field of innovation studies have focused on the dynamics of innovation process as a basic source of productivity growth. However, there is no agreement on what indicators should be used for measurement and assessment of innovation process in the literature. Nonetheless, in the1970s and 1980s, it can be argued that Research and Development (R&D) activities have been perceived as one of the main driving force of innovation process. Accordingly, the innovation studies focused on the indicators like expenditures on R&D and direct results of R&D like the number of scientific publications and patent. It seems that innovation process has been mainly analysed by the linear models based on the causality relation from R&D activities to innovation. Accordingly, innovation process begins with basic and applied research and advances through testing invention in commercial market by firms. Thus, innovation is seen as an output of a linear process performing in a sequential order (Samara, et. al, 2012: 624).

From the beginning of the 1990s, systemic perspectives have been widely used to examine the dynamics of innovation process. In the framework of systemic perception of innovation, it has been argued that innovation exists in a system consisting of different components and performs depending on interaction of these components. Thus, while systemic perception became main approach to understand the innovation process, economists focused on the range of indicators symbolising different components of innovation system as the basic analytical tools. Under this line of view, the thinking analysing innovation process from a systemic perspective at the national level has been called "National Innovation System (NIS) approach". In the framework of systemic perception, NIS approach argued that interaction or complementarity among the system components is a significant factor effecting innovation dynamics and performance.

NIS approach has changed the views concerning with the R&D activities as a basic dynamic of innovation process. Systemic perception argued that all components in the system can fulfil their functions by only inter-acting each other. Thus, R&D activity as a component of the system can also fulfil their functions by only inter-acting other components of the system. In other words, the impact of R&D activity on innovation process is an endogenous factor affected by other components of NIS. Therefore, we have limited insights on the drivers of innovation process at national level if we focus on R&D activity as a basic dynamic of NIS. Ignoring the complementary among system components also results in misuse and even abuse of policy implication concerning with R&D activities.

Under this line of view, our study aims to show the complementarity among the components of NIS. Accordingly, we have empirically examined how Human Capital accumulation and R&D activities interact in the generation of innovation process in European countries over the period 2000-2013. Thus, we try to investigate the argument of NIS approach concerning with the complementarity among Human Capital and R&D activities in the innovation process of Europe. Our paper is organised after this introduction as follows. Second section describes the existing literature on the effectiveness of R&D activities and their complementarity

relationship with Human Capital. The third section presents the data, methodology and empirical results. Final section concludes and makes some policy implications.

Literature Review

R&D activities include the creative works undertaken on a systematic way in order to accelerate the knowledge accumulation, which enhances to use new application resulting in productivity growth. Accordingly, R&D expenditure may be considered as an investment increasing knowledge base related to more efficient production methods in an economy. Looking at the literature, it seems that there are a lot of studies indicating the impact of R&D activities on the economy. Most of these studies focusing on the impact of R&D activities on economic growth come from the endogenous growth theory scholars. However, although systemic perception argued that interactions among the components of innovation system affect the performance of innovation process by providing incentives for each other, these interactions between R&D activities and other components in innovation system have been ignored by scholars of endogenous growth theory. For example, they focused on either on human capital accumulation or on R&D as engines of endogenous growth. Thus, productivity growth of economy is ultimately determined by either the larger the stock of human capital or the more resources spent on R&D.

In the framework of this line, there are three main studies which are developed by Romer (1990), Grossman and Helpman (1991) and Aghion and Howitt (1992). All of these studies concerning with R&D based technological progress assume that the stock of human capital is fixed and exogenously determined while analysing the impact of R&D activities on productivity growth. Romer (1990) defines technological change as the basic dynamic of productivity growth, which is based primarily on expenditures on R&D. Accordingly; Romer argued that decreasing returns to scale has been prevented by the knowledge sourced from R&D activities. Grossman and Helpman (1991) have also clearly pointed out that the relationship between R&D expenditure and productivity growth. They treated RD activities as a significant source in innovation process. Aghion and Howitt (1992) put the idea of creative destruction into formal mathematical terms indicating the significance of R&D activities in their models as an alternative explanation of endogenous growth.

More recently, Prodan (2005) analysed the relationship between R&D investment and patent applications in OECD countries for the period covered from 1981 to 2001. Empirical findings showed that there is a positive correlation between R&D and patent applications. Moreover, the increase of R&D expenditure in business sector increased the number of patent applications more than increase of R&D on general. Falk (2007) estimated the impact of R&D expenditure of high-tech sector on long-term economic growth by using panel data for OECD countries from 1970 to 2004. Empirical findings showed that R&D investment in the high-tech sector have strong positive effects on GDP per capita in the long-term. Thus, he provided empirical evidence of the relationship between R&D intensity and economic growth for high-tech industries in OECD countries. Guloglu and Tekin (2012) examined possible causal relations among R&D expenditures, innovation and economic growth in high income OECD countries by using panel vector autoregressive model for the period between 1991 and 2007. Empirical evidence showed that R&D activity has a significant effect on economic growth by accelerating technological progress. Thus,

empirical results indicated the causal relationship from R&D to innovation and economic growth as presumed by endogenous growth theory. Finally, Gumus and Celikay (2015) determined the relationship between R&D expenditures and economic growth by employing a dynamic panel data model in 52 countries for data from 1996 to 2010. They also indicated that the effect is weak in the short run but strong in the long run for developing countries.

Consequently, it is broadly accepted that R&D is one of the most important factor of economic growth by enhancing technological capabilities of an economy. Thus, RD activity has generally been a subject attracting considerable attention in policy circles since these kinds of activities have the potential to enhance innovative capacity of countries. Because of this reason, most of the policymakers establish explicit target or the levels of R&D spending. These targets are often expressed RD as a specified level of GDP, which is called R&D intensity. Accordingly, most of the nations have aggressively devoted more and more resources to R&D activities to improve innovation capacity. In conclusion, setting R&D spending targets based on R&D intensities (Gross Expenditure on Research and Development as a share of GDP) has been the most popular part of science and technology policy in many countries. However, looking at the literature, systemic perception of innovation as another significant approach noted that RD expenditure is an important vehicle for achieving innovation only when there is sufficient capacity created in innovation system.

Most of the innovation theory scholars argued that system approach is essential to understand the innovation process and thus produce better policy implication. Indeed, National Innovation System (NIS) approach has also become the most popular analytical tool to examine the basic dynamics of innovation process at the macro level (Carlosson, 2007: 861). This kind of systemic thinking about innovation at the national level was developed by three main studies: Freeman (1987) at Science Policy Research Unit (SPRU) in the United Kingdom, Lundwall (1992) at the IKE Group in Denmark and Nelson (1993) at Columbia University in the United States. Beyond its spread among the academic community, the approach of NIS has also been increasingly used by international organizations as an analytical framework for the study of innovation (Teixeira, 2013: 2). Consequently, NIS approach gets diffused across the national and international organizations and academic world as a theoretical framework in order to analyse innovation process at national level.

NIS approach examines the innovation process in a national system consisting of different components and relationships among them which generate and use of new and economically useful knowledge (Lundwall, 1992: 12). Thus, innovation is generated in a system consisting of different components. Every component in NIS has a function to promote innovation process and thus promote innovation performance of system. Every component has also an intensive relationship with other components and these interactions among components significantly affect their functional performance and thus whole system performance. That means interactions between the components of system effect innovation performance of whole system. Thus, the concept of NIS specifically postulates the interactions among components in order to indicate the complex dynamics system characteristic of innovation process. In conclusion, interaction and complementarity among the system components is a significant factor effecting innovation dynamics and performance. Therefore, to achieve high level of R&D need significant structural properties for getting better

innovation performance. R&D activities as one component of NIS can fulfil their functions by only inter-acting other components of NIS for promoting of innovation performance.

Under this line of view Park and Park (2010) empirically investigated the relationship between R&D expenditure and industrial structure in OECD countries. They used the data covering the reference period 1978-1995 for 22 member countries. The correlation analysis of study revealed that there exist a significant relationship between R&D structure and industrial structure. Thus, they argued that the portfolio of R&D investment be aligned with the portfolio of industrial structure. Kim et al. (2011) analysed the different factors affecting the performance of R&D activity in 254 Korean IT-related businesses during the two-year period between 2005 and 2007. They found that external networking and technology commercialization capabilities significantly determined the performance of R&D activity on innovation process. Accordingly, they concluded that firms must develop their external networking and commercialization capabilities rather than narrowly focusing on R&D activities.

Sjögren (1998) developed a model which specifically analyzes the effects of R&D activity and Human Capital at the same time in order to capture the interaction between them. He indicated the mutual relationship between Human Capital and R&D activity. He argued that R&D activity is limited importance for growth in the long run without human capital accumulation. He also pointed out that investment in R&D can increase the accumulation of human capital. Neagu (2011) empirically investigated the link between the investment in R&D and the accumulation of human capital in European Union underlying the case of Romania. Empirical findings indicated that there is mutual relationship between human capital and R&D activity. Accordingly, human capital accumulation stimulates both inputs and outputs of the R&D investment while R&D investment is also leading to an accumulation of high quality human capital. Thus, he concluded that appropriate innovation policy measures have to be taken the complementarity effect of human capital on R&D activities.

By using panel co integration analysis, Castellacci and Natera (2013) tried to measure how national system of innovation evolves over time for 87 countries in the period 1980-2007. While R&D expenditure was defined as an input of innovative capability, some other indicators symbolised the absorptive capacity like Human Capital. The empirical results indicated that innovative capability and absorptive capacity variables are linked by a set of long-term structural relationship. They suggested that policy-makers should provide the building blocks among the innovation policy applications since innovation processes is a complex evolving system. Finally, Yeldan (2012) analysed the interactions among the basic dynamics of knowledge-driven growth to make better policy implication for the Turkish economy within the context of a general equilibrium model. He specifically seeks answers to the following question: for a government which policy choice would be better; promotion of human capital formation through subsidies to education in order to develop human capital, or promotion of new R&D advances through subsidies for R&D activities? Empirical findings indicated that public policy should be directed toward hybrid policy applications related to RD activity and Human Capital rather than only focusing on one isolated policy choice since there is a complemenatrity between policy alternatives.

Data, Methodology and Empirical Results

In this section, our research study adopts a dynamic analysis perspective and focus on the empirical examination of interactions among the basic system components. By focusing much more on this interaction in innovation process, our basic aim is to make NIS approach more realistic and feasible to improve policy design and implementation. Accordingly, we calculate the interactions among the set of variables related to R&D activities and Human Capital within the European countries. We have identified the data set related to Research and Development (X_1, X_2, X_3) and Human Capital (Y_1, Y_2, Y_3) in Table-1. We used the most recent and available annual data from EUROSTAT under the thematic subtitle of Science and Technology over the period from 2000 to 2014. We have considered 12 European countries which are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and, United Kingdom.

In order to investigate the relationship between related components of NIS, we will use the Canonical Correlation Analysis (CCA) as a system identification method. CCA is a generalisation of the technique of regression of one variable on another. To evaluate the simultaneous relationship between X-variable set and Y-variable set, the observed variables in each set must somehow be combined together into one synthetic variable. Thus, synthetic variables are created by applying a linear equation to the observed X-variable set and Y-variable set. Thus, CCA focuses on the correlation between a linear combination of the variables in the X-variable set and Y-variable set such that the correlation between the two canonical variables maximized (Sherry and Henson: 2005: 39).

This empirical model can be described briefly like below (Johnson and Wichern, 2007: 539-541). Assume that, there are original two data set: X-Variable Set (X1, X2,.......Xp) and Y-Variable Set (Y1, Y2,.......Yq). Dual canonical variables U_i and V_i are derived by the linear combination of observed original data set indicated below.

$$U_i = a_{i1} X_1 + a_{i2} X_2 +......+ a_{ip} X_p$$
$$V_i = b_{i1} Y_1 + b_{i2} Y_2 +......+ b_{2ip} Y_p$$

The criteria for determining the number of dual canonical variables (s); (U_i , V_i) s = Min (p , q) and $(a_{i1}, a_{i2}, ... a_{i1p})$ and $(b_{i1}, b_{i2}, ... b_{i1q})$ are called canonical vectors. Thus, linear components of the data set can be redefined as follows:

$$U_i = a' X$$
$$V_i = b' Y$$

Then the variance and covariance of canonical variables can be calculated as follows:

$$Var\ (U_i) = a`\ Cov\ (X)\ a = a`\ \Sigma_{11}\ a$$
$$Var\ (V_i) = b`\ Cov\ (Y)\ b = b`\ \Sigma_{22}\ b$$
$$Var\ (U_i , V_i) = a`\ Cov\ (XY)\ b = a`\ \Sigma_{12}\ b$$

Thus highest correlation coefficients (**R$_i$**) for canonical vectors *a* and *b* and therefore the canonical variables U$_i$ and V$_i$ can be obtained from the following formula;

$$R\_i \ (U\_i \ , V\_i \ ) = (a`\Sigma\_(12 \ ) b)/(\surd(a`\Sigma\_(11 \ ) a \ ) \ \surd(b`\Sigma\_(22 \ ) b))$$

In the framework of canonical correlation analysis also produces "Canonical Loadings of the Original Variables with their Canonical Variables" and "Canonical Loadings of the Original Variables with opposite Canonical Variables" in order to indicate the impact of original variables on own and other canonical variables. Accordingly, while analysing the interactions among capacity components, we try to indicate both the whole impact of capability components (Canonical Correlation Analysis) and the relative importance of variables related to every components (Loading and Cross-Loading of Original Variables Analysis).

In the framework of analytical methodology indicated above, we set up Model-1 shown in Table-1 in order to measure the interactions among basic capacity components. Model 1 indicates the interactions among the set of variables related to capacity components of Research and Development (X$_1$, X$_2$, X$_3$) and Human Capital (Y$_1$, Y$_2$, Y$_3$). As argued by National Innovation System approach, it is expected that variables related to R&D activities and Human Capital are linked together by a set of two-way dynamic relationships. The intuition is pointed out between two components of R&D and Human Capital as follows: On the other hand "Human Capital Productivity Effect" may operate from Human Capital to R&D. Accordingly, successful policy applications towards human capital boost innovative R&D activity over time. Firstly public policies towards enhancing human capital may result in an increase in productivity of human capital. Later, this likely strengthens the productivity of the country's R&D sector, which increases the amount of resources devoted to R&D activities. On the one hand "R&D Innovative Activity Effect" may operate from R&D to Human Capital. Accordingly, successful R&D activity may sustain the development of human capital over time. Firstly, R&D investments and innovative efforts may increase the country's technological performance and commercial success. Later this tends to increase the country's pool of financial resources, some of which will be reinvested to increase its level of infrastructure that enhances human capital in the future (Neagu, 2011: 540).

Empirical results of Cannonical Correlation Analysis based on the theoretical framework indicated above are shown in Table-2, Table-3, and Table-4. Findings of canonical correlation coefficients for data set of the capability components relating to R&D and Human Capital (Model-1) in Table-2 show that all canonical correlations are significant, which indicates that capability components have strong interrelationships among themselves. Canonical loadings and cross-loadings relating to first canonical correlation coefficient between Human Capital and R&D shown Table-3 and Table-4 specially emphasize the significance of variables such as "graduates from doctorate education" and "labour force as the share of personnel employed in R&D" in co-evolution of these two components. Thus, Table-3 and Table-4 also indicate the interactions among components related to Human Capital

and R&D by presenting the relative importance of each original variables for own canonical variable and opposite canonical variables, respectively. All these results indicate the significant interaction between the capability components of R&D and Human Capital.

Thus, empirical findings of our study show that capacity component of NIS are linked by a set of two-way dynamic relationships, which represents a co-evolution process and thus a key mechanism driving the growth of NIS in the long-run. Indeed, NIS is dynamic systems whose evolution is driven by a complex set of two-way self-reinforcing relationships. Therefore, any given change in one of the factors composing the NIS has a set of direct effects on several other variables of the system, as well as a set of indirect effects that are mediated through other factors in the model. These co-evaluation or two-way dynamic relationships among the capacity component also indicate the complementarity among components of the system. Therefore, focusing only a single component of innovation system is not enough to investigate the dynamics of innovation process. That means innovation processes cannot be decomposed into several isolated phases that take place in a strictly proceeding sequence. Our empirical findings clearly indicate that components of NIS are linked together by a set of two-way dynamic relationships. From this perspective, the effectiveness of innovation policies depends not only on how the individual innovation policies perform in isolation, but on how they interact with each other. Therefore, innovation policies should include a comprehensive and co-ordinated set of actions rather than focusing only a single policy in order to promote efficiency of components in innovation process.

Table-1: Canonical Correlation Analysis for data set of Human Capital and R&D (Model-1)

Capacity Variables of Human Capital Component		Canonical Variables of R&D Expenditure	Canonical Coefficient	Canonical Variables of Invention/ Innovation	Capacity Variables of Research and Development Component	
X_1	R&D performed by Business (% GDP)	U_1 U_2	R_1 R_2	V_1 V_2	Total expenditure on education (% GDP)	Y_1
X_2	R&D performed by Government (% GDP)	U_3	R_3	V_3	Graduates in upper secondary education -per 1000 population aged 25–34	Y_2
X_3	R&D personnel (% of the labour force)				Doctorate graduate per 1000 population aged 25–34	Y_3

Table-2: Canonical Correlation Analysis (Model-1)

Pair of Canonical Variables	Canonical Correlation	Squared Canonical Correlation	Wilk`s Lambda	Chi-Square	df	P value
$U_1 V_1$	0.930	0.865	0.108	47.536	9	0.000

$U_2\,V_2$	0.882	0.778	0.167	39.725	4	0.000
$U_3\,V_3$	0.711	0.506	0.241	8.355	2	0.017

Table-3: Loadings of the Original Variables with their Canonical Variables (Model-1)

	Research and Development - Variable Set ($X_1\ X_2\ X_3$)		
	X_1	X_2	X_3
U_1	0.676	0.280	0.763
	Human Capital - Variable Set ($Y_1\ Y_2\ Y_3$)		
	Y_1	Y_2	Y_3
V_1	0.568	0.754	0.895

Table-4: Cross- Loadings of the Original Variable with opposite Canonical Variable (Model-1)

	Research and Development - Variable Set ($X_1\ X_2\ X_3$)		
	X_1	X_2	X_3
V_1	0.633	0.248	0.729
	Human Capital- Variable Set ($Y_1\ Y_2\ Y_3$)		
	Y_1	Y_2	Y_3
U_1	0.536	0.719	0.853

Conclusion

National Innovation System (NIS) approach asserts that dynamics of innovation process are basically driven by the interactions among the components of the system. The purpose of our study is to analyse these interactions in order to empirically investigate the dynamics of innovation process as complex evolving systems. Thus, our analysis mostly takes into account the "mutual functional patterns" of capacity components related to NIS. Accordingly, we perform Cannonical Correlation Analysis on the relationship between components of R&D and Human Capital in NIS of European Countries to measure the complementarity among them.

Empirical findings indicated that there are strong interactions among the variables relating to components of Human Capital and R&D in NIS of European Countries. Thus, we clearly presented that performance of NIS is characterised by its cross linking between the different components of the system. Our empirical findings have provided rich insights into the complementarity among the components of NIS as basic dynamics of innovation process. Consequently, as the analytical framework outlined based on NIS approach, it should be given increase insights towards circular causal relationships among components as a basic dynamic of innovation process. Therefore, focusing only a single component of innovation system cannot be enough to investigate the dynamics of innovation process.

These results concerning with the basic dynamics of innovation process also generate significant implications for the policy design process. Policy makers should consider the complementarity among components of NIS for better policy implications. From this perspective, the effectiveness of innovation policies depends not only on how the individual innovation policies perform in isolation, but on how they interact with each other. Therefore, the increase of R&D intensity at country level is a necessary but not sufficient condition for promoting innovation system efficiency. Single policies which are isolated each other are ineffective since these policies don't care the interactions among the basic components of NIS. Therefore, effective innovation policy performance requires combining a range of policy measures. For example, innovation policies like European Union aiming to increase R&D-to-GDP ratio to certain level is not enough without systemic design of other components like human capital.

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