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Abstract

This study was conducted to test the mediating effects of work-family factors on the relationships between dispositional and occupational characteristics as the independent variables and intention to stay as the dependent variable. By using self-administered research questionnaire, data was collected from 240 middle age single mother employees in Klang Valley, Malaysia. Samples were determined through simple random sampling method whereby six out of 24 single mother associations were selected to obtain research samples. Descriptive statistical analysis was conducted to describe the respondents. Pearson Product Moment Correlation was used to determine the relationships among variables and Structural Equation Modeling using AMOS version 16.0 was utilized for model testing and to verify the presence of mediation effects. Further, the Sobel’s z-test was used to test whether the mediators carry the effect of the independent variables on the dependent variable. The findings indicated that there were positive relationships among variables. The results also established the presence of mediation effects between the independent and dependent variables. Organizations may utilize work-family factors as mechanism to promote longer retention among employees.

Keywords: Intention to Stay, Work-family Facilitation, Family Satisfaction, Dispositional Characteristics, Occupational Characteristics.

1. INTRODUCTION

Since 1980s employee turnover has attracted many researchers especially in human resource area due to its negative impacts. The impacts could be seen from the cost involved for training and orientation of new employees and destabilization of human resource supply that led to destabilization of work-client relationship (Montague, 2004). According to Shaw, Gupta and
Delery (2005); Meier and Hicklin (2008) hiring and training being a compulsory agenda after the employees' resignation, indicated that turnover was adversely correlated to performance, thus disrupting the process to meet organizational goals in both the public and private sectors.

Employee turnover intention is defined as an idea or thinking about quitting a job (Firth, Mellor, Moore & Loquet, 2004). An individual's intention to perform or not to perform a behavioral act is the immediate determinant of action. Based on this notion an individual who nurtures the thought of quitting his present profession is more likely to do so if the right condition exists, or if the adverse condition that warranted the thought of intent persists (Ajzen & Fishbein, 1980). Intention to stay however is simply the converse of the turnover intention (Kim, Price, Mueller & Watson, 1996). According to Black and Stevens (1989) intention to stay was significantly negatively correlated with turnover. Since intention to stay is referred to as employees' willingness to stay with an organization (Tett & Meyer, 1993), it consistently demonstrated a stronger relationship with turnover than did other turnover precursors (Tett & Meyer, 1993). Therefore although the construct of the study was turnover intention, but the focus of investigation was from the perspective of intention to stay.

This study was meant to measure turnover intention among single mother employees in Malaysia. Specifically this study was conducted to test the relationships between independent (dispositional and occupational characteristics), mediation (work-family factors) and dependent (intention to stay) variables. The study was also meant to test the mediating effects of work-family factors (work-family facilitation and family satisfaction) on the relationships between dispositional (self-efficacy and internal locus of control) and occupational (job demands) characteristics and intention to stay among single mother employees.

Due to rapid economy development, there has been an increase in competitive pressures on organisations to increase productivity; that lead to increase in work demands on the workforce, leaving less time available for the employees to be with their families. In Malaysia there were about 70 percent mothers with children below 12 years of age working full-time (Yunos & Talib, 2009). This situation creates different and unique challenges for women especially single mothers in terms of work and family obligations and responsibilities. According to Parkman (2004) women spent twice as many hours on average on home activities and family tasks as men. Since single mothers have to smartly tackle demands rooted from both domains. The study was really keen to investigate the interaction between positive and negative valences (intent to stay or intent to quit) with the influence of work-family factors and how these factors tailored the respondents' decision for their future.

2. THEORETICAL FRAMEWORK
This study utilizes several theories to explain the framework of the study. Then the discussion continues by focusing on the variables to be examined in the study: intention to stay, work-family facilitation, family satisfaction, self-efficacy, internal locus of control and job demands among single mother employees in selected states in Malaysia.

2.1 Conceptual Overview and Definition of Intention to Stay
Intention to stay indicates the employee's level of commitment to his organization and the willingness to remain employed (Hewitt, 2004). It is sometimes referred to as the propensity to leave, intent to quit, intent to stay, behavioral commitment and attachment (Halaby, 1986; Mueller, Iverson, & Price, 1999). Several studies have revealed that this concept whether it is called 'intent to stay' or 'propensity to leave', it is clearly the most important determinant of turnover (Tett & Meyer, 1993; Igharia & Greenhaus, 1992). Dalessio, Silverman and Shuck (1986) have emphasized that more concern should be given on intention to stay rather than turnover, as whenever an employee has exit, an organization has to incur the cost of recruiting and maintaining a new employee.
2.2 Social Exchange Theory as Foundation of Intention to Stay

Social Exchange Theory (SET) developed by Thibaut and Kelley (1959), had explained the reasons why individuals had personal relationships with others (Thibaut & Kelley, 1959). The theory also emphasized on personal relationships, its costs and benefits. What rewards did people receive from a given relationship, and what costs did they pay to obtain those rewards? Social Exchange Theory posited that good deeds should be reciprocated (Blau, 1964). Mossholder, Settoon and Henagan (2005) had pointed to Social Exchange Theory which proposed that individuals who felt that they had received benefits from others would later feel an obligation and then compensate through effort and loyalty. Effort and loyalty usually could be seen from a shear commitment to their job and strong intention to remain with the present employer. Employee's loyalty clearly fitted within the framework of SET since it focused on citizenship behaviour whereby employees stopped looking for a new job elsewhere since they felt obligated to stay and repay the organization for support they had received (Rhoades & Eisenberger, 2002).

2.3 Conceptual Overview and Definition of Work-Family Facilitation

Previous research on work-family arrangement mostly focused on the outcomes, or the influence of an individual's involvement in one domain either family or work which led to the change in performance and quality of life in the other domain (Greenhaus & Powell, 2006). These positive reciprocal relationships were conceptualized as: (a) positive work-family spillover (Grzywacz, 2000), (b) work-family facilitation (Frone, 2003; Grzywacz, & Butler, 2005), (c) work-family compatibility (Grzywacz & Bass, 2003) and (d) work-family fit (Grzywacz & Bass, 2003; Voydanoff, 2002). Greenhaus and Powell (2006) conceptualized facilitation as the extent to which experience in one life sphere improved the quality of life in the other. Since the study on facilitation is relatively very new in the field of work-family arrangement, there is no single established definition that has best explained the concept "facilitation". For the purpose of the present study, work-family facilitation is defined as occurring when, by virtue of participation in one role (work), one’s performance or functioning in another role (family) is enhanced. The study imposed theoretical attention on the topic of facilitation that brought to an explicit definition of the construct.

2.4 Theoretical Foundation of Facilitation

In this study, three complementary frameworks were integrated to build a theoretical foundation for facilitation called the Resource-Gain-Development (RGD) perspective proposed by Carlson, Kacmar, Wayne and Grzywacz, (2007). First: Positive Organizational Scholarship (POS) by Cameron, Dutton, Quinn and Wrzesniewski (2003) explained the positive processes and outcomes of interactions between individuals and organization in organizational setting. Second: Ecological Systems Theory (EST) by Bronfenbrenner (1979), an emerging theory within the work-family literature (Geurts & Demerouti, 2003; Grzywacz & Marks, 2000; Voydanoff, 2001) which emphasized that people had natural desire and the capacity for growth and development. Finally: Conservation of Resources Theory (COR) by Hobfoll (1989) which also had been applied to the work-family interface provided a heuristic approach in identifying the specific type of resources for the facilitation of the positive interaction between work and family domain.

2.4.1 Positive Organizational Scholarship

Positive Organizational Scholarship (POS) emphasized on the interactions between individuals and organizations in organizational settings and what both parties could benefit from these interactions (Cameron et al., 2003). Essentially, this transaction focused on the individual's capabilities and organizational processes that contribute to positive organizational 'outcomes'. POS represents a perspective that including instrumental concern and emphasizes on positive idea and human potential. Facilitation clearly fitted within the framework of POS since it focused on an enhanced functioning within the work or family domain (Carlson et al., 2007). POS provided an explanation for the 'purpose' of facilitation and its potential for affecting 'outcomes' in social systems such as work and family. Positivity was viewed as functional because it activated
a variety of forces that promoted individual and organizational strengths (Cameron et al., 2003; Fredrickson & Losada, 2005).

2.4.2 Ecological Systems Theory
Ecological systems theory (EST) served as a framework for work-family experiences (Grzywacz & Marks, 2000; Voydanoff, 2001) and provided a clear direction for informing facilitation. First, ecological theory complemented the function of POS in explaining the factors leading to the occurrence of facilitation. EST argues that individuals had the natural potential toward higher levels of functioning (Bronfenbrenner, 1979). Ecological systems theory is also instructive for explaining how facilitation occurred and broadly, likely antecedents. According to EST, individual development is a result of ongoing interactions between the individual and his/her environment (Bronfenbrenner & Ceci, 1994). Therefore EST suggests that resources within an individual's environment are the primary sources of facilitation since they bridge the interactions between individuals and their work and life environment (Carlson et al., 2007).

2.4.3 Conservation of Resources Theory
Both POS (Cameron et al., 2003) and EST (Bronfenbrenner, 1979) provided a foundation on why and how facilitation occurred and suggested the importance of resources. Conservation of Resources (COR) theory (Hobfoll, 2001) provided a basis for identifying the specific type of resources. COR model defined resources as valued articles people seek to acquire and manage. Hobfoll (2001) defined resources as properties of the environment that can be utilized for a certain purpose such as personal characteristics, objects, conditions, energies, and support that serve as a means for the attainment of these objects. Personal characteristics are those traits or skills that resulted from one's orientation to the world such as self-efficacy and internal locus of control. Objects are valued because of their physical nature or the status obtained through their ownership such as one's car, home, clothes or other material goods. Energy resources, such as time, money, knowledge, and skills are those that aid in the acquisition of other resources such as time for work or family and opportunities for advancement. Conditions are resources that are sought after such as marriage, divorce, employment, or seniority. Finally, support such as loyalty or intimacy preserves other types of resources (Carlson et al., 2007).

2.4.4 The Resource-Gain-Development Perspective
The basic premise of the RGD perspective is that individuals are dynamic and have the natural potential to grow, develop, and achieve the highest levels of functioning for themselves and the systems in which they have participated including families and organizations. Individuals having this natural tendency toward positivity and development, when engaged in a role, they will obtain resources that enable growth and development. When individuals utilized those available resources they would obtain positive gains. When gains from one domain are utilized, sustained, and reinforced in another (Kirchmeyer, 1992), it would improve system functioning.

The RGD perspective posited that antecedents of facilitation consisted of personal characteristics and environmental resources (objects, conditions, energies, and support) that contributed to the development of new skills and perspectives (developmental gains), positive emotion (affective gains), economic, social, or health assets (capital gains), and greater efficiency (efficiency gains) in one system which enhanced functioning of the other systems (Carlson et al., 2007). The greater of any single resource an individual has, the greater the potential for facilitation is; likewise, the greater the overall accumulation of resources, the greater the potential for facilitation.
3 RELATIONSHIPS BETWEEN DISPOSITIONAL CHARACTERISTICS, WORK-FAMILY FACILITATION, FAMILY SATISFACTION AND INTENTION TO STAY

The focus of the study was to examine the relationships between dispositional characteristics and work-family facilitation and how this construct related to family satisfaction and intention to remain working among single mother employees in Malaysia. Demographic variables were included in the study as control variables. Demographic variables are defined as individual-based variables such as age, job position, monthly income, working experience and number of children. Literature has shown the relationship between demographic variables and work-family facilitation and reported that women had higher positive spillover from work-to-family than men (Gryzwacz et al., 2002; Gryzwacz & Marks, 2000; Voydanoff, 2004). A few studies had examined the correlation between individual differences and work-family facilitation (Gryzwacz et al., 2002; Voydanoff, 2004). In addition individual differences evidently predicted patterns of work-family facilitation (Gryzwacz & Marks, 2000). In this study personal characteristics were confined to self-efficacy and internal locus of control.

3.1 Relationship Between Self-efficacy and Work-family Facilitation

General self-efficacy is conceptualized as a stable cognition that people hold and carry with them, reflecting the belief that they possess the ability to successfully perform tasks in a variety of achievement situations (Riggs & Knight, 1994, cited in Gardner & Pierce, 1998). Similarly other researchers define self-efficacy as an individual’s beliefs about his or her ability to successfully perform a given behavior or task (Bandura, 1977; Hackett & Betz, 1981) and likely leads to gains for the worker which can contribute to family functioning. Employees high in self-efficacy personality were more active in trying new things they have learned at work and attempted more difficult tasks (Ford, Quinones, Sego & Sorra, 1992). Self-efficacy was also a potent factor in learning performance (Goldstein & Ford, 2002) and contributed to success at work (Judge & Bono, 2001). Since individuals higher in self-efficacy sought more opportunities and experienced more success, they were likely to acquire new skills and perspectives, positive mood, confidence and even economic assets to the benefit of their family (Goldstein & Ford, 2002) and the following hypothesis was tested:

Hypothesis 1: There is a positive linear relationship between self-efficacy and facilitation.

3.2 Relationship Between Self-efficacy and Family Satisfaction

According to Bandura (1986), an individual’s level of self-efficacy could be directed to reduce negative perceptions that led to stress. In this line, Matsui and Onglatco (1992), in their research have found a negative significant relationship between individuals’ self-efficacy and vocational strain. In another research, Judge, Locke, Durham and Kluger (1998b) after exploring core self evaluations, consisting of self-efficacy and self-esteem, found that core-self evaluation influenced individuals’ perceptions of work attributes such as work autonomy and task significance. Individuals with positive self concepts perceived more intrinsic value of their work and reported high job and family satisfaction (Judge et al., 1998b). Therefore individuals with high self-efficacy were less sensitive to stressors and thus having less potential to strain across domain, work to home and vice-versa (Judge et al., 1998b) thus the following hypothesis was tested:

Hypothesis 2: There is a positive linear relationship between self-efficacy and family satisfaction.

3.3 Relationship Between Self-efficacy and Intention to Stay

Erdwins, Buffardi, Casper and O’Brien (2001) complemented this notion through his research which demonstrated, the high level of self-efficacy negatively related to conflict between work and home and negatively related to intention to leave. Therefore this study suggests that:

Hypothesis 3: There is a positive linear relationship between self-efficacy and intention to stay.
3.4 Relationship between internal locus of control and work-family facilitation

Locus of control is conceptualized as a generalized expectancy concerning the extent to which an individual believes that reinforcements, rewards or success are either internally or externally controlled (Rotter, 1954). An internal locus of control implies a belief in personal power, control and influence over the outcome of events. While an external locus of control implies a belief that personal power has a minimal affect on the outcome of events, these being influenced by fate, chance and powerful others (Rotter, 1954). Since individuals with an internal locus of control personality (internals) were more likely to believe they had control over their live events, internals perceived fewer stressors (Brookings, Bolton, Brown & McEvoy, 1985) that resulted in less strain (Siu, Lu & Cooper, 1999) which provided an evidence that internals would be more likely to experience positive spillover from work to family, thus the following hypothesis was tested:

Hypothesis 4: There is a positive linear relationship between internal locus of control and work-family facilitation.

3.5 Relationship Between Internal Locus of Control and Family Satisfaction

Furthermore research has demonstrated that positive experience at work, including that related to job satisfaction, affected positive experience at home (Judge & Ilies, 2004), and this positive spillover functioned as motivation to individuals to remain with organization as from this engagement would allow family member to enjoy the fruit of their occupation (Judge & Ilies, 2004). Based on the past research, this study hypothesized the following:

Hypothesis 5: There is a positive linear relationship between internal locus of control and family satisfaction.

3.6 Relationship Between Internal locus of Control and Intention to Stay

Several studies showed that an internal locus of control was related to higher job and family satisfaction that lead to more loyalty to organization (Lewis & Borders, 1995; Spector, 1986). Accordingly this study also hypothesized as follows:

Hypothesis 6: There is a positive linear relationship between internal locus of control and intention to stay.

4 RELATIONSHIP BETWEEN OCCUPATIONAL CHARACTERISTICS AND WORK-FAMILY FACILITATION, FAMILY SATISFACTION AND INTENTION TO STAY

4.1 Relationship Between Job Demands and Work-family Facilitation

Karasek’s (1979), suggested that high job demand-high decision latitude could lead to the development of new behavior both on and off the job (Karasek, 1979). This new behavior pattern may link to job satisfaction, high self esteem and less intention to quit the job (Karasek, 1979). Literature has reported the correlation between work demands and work role quality and work-family facilitation. Voydanoff (2004a), in two different national surveys, examined the relationship between work demands and work-to-family facilitation. Women with rewarding jobs were protected from the negative mental health caused by troubled relationships with their children. Barnett, Marshall, & Sayer, (1992) using the same sample of 409 women discussed above, looked at the job rewards to identify which factors mitigated the relationship between parent-role quality and psychological distress. They found that challenging work was the only job factor that mitigated parental stress. If employed mothers experienced higher reward from challenging work they reported less distress, regardless of their level of disaffection in their relationship with their children. If the reward from challenging work was low, employed mothers who were concerned about disaffection in their relationship with their children reported high psychological distress (Barnett et al., 1992). Research by Wayne, Musisca, & Fleeson, (2004) had shown that positive
relationship between total work hours was significantly related to work-to-family facilitation. Similar results were reported by Wayne, Randel, and Stevens (2003) in their examination of the relationship between organizational time demands, organization support (usage of family-friendly benefits), family supportive work culture, and work-to-family facilitation, reported that a supportive work culture and organizational time demands was positively predicted work-to-family facilitation. Based on theory and evidence the following hypothesis was tested:

Hypothesis 7: There is a positive linear relationship job demands and facilitation

4.2 Relationship Between Job Demands and Family Satisfaction
Karasek (1979) labels high demand-high decision latitude jobs as ‘active’ and led to the development of new behavior pattern (Karasek, 1979). Grzywacz and Butler (2005); Grzywacz and Marks (2000); and Voydanoff (1988), suggest that high job demand is positively correlated to greater work-family conflict. Conceptually, high perceived workloads influenced employees’ affective experiences at home because the affect experienced at work is positively correlated work spills over onto the affect experienced at home (Edwards & Rothbard, 2000). Positive spillover from workplace to family members at home mirrors certain job characteristics that may enhance an employee’s family satisfaction. Therefore this study suggests that:

Hypothesis 8: There is a positive linear relationship between job demands and family satisfaction

4.3 Relationship Between Job Demands and Intention to Stay
Voydanoff (2004) in her study discovered that job demands might enhance an employee’s family satisfaction. This satisfaction serves as internal motivation for employees to work hard and at the same time be more committed with their job and high loyalty to organization (Butler, Viet, Narrigon & Taylor, 2005). The finding suggested that certain job demands might enhance an employee’s satisfaction and at the same time employees become more committed with their job and high loyalty to organization (Butler et al., 2005). Therefore this study suggests that:

Hypothesis 9: There is a positive linear relationship between job demands and intention to stay

5 MEDIATION EFFECTS OF WORK-FAMILY FACILITATION AND FAMILY SATISFACTION ON THE RELATIONSHIP BETWEEN SELF-EFFICACY, INTERNAL LOCUS OF CONTROL, JOB DEMANDS AND INTENTION TO STAY

5.1 Mediation Effects of Work-family Facilitation on the Relationship Between Self-Efficacy and Intention to Stay
Work-family facilitation that can be conceptualized as the positive spillover was stemmed from spillover theory (Greenhaus & Powell, (2006). The theory postulated that the rewards from simultaneously occupying roles between the work micro-system and the family micro-system occurred either positively or negatively. The nature and strength of these relationships depended upon personality trait of the individual (Grzywacz, 2002). Some individuals are able to obtain more resources from their environment or more effectively use resources, thereby receiving greater benefits. For example, professionals with high self-efficacy frequently have greater access to family supportive resources than professionals with lower in this trait (Lambert & Haley-Lock, 2005) and accordingly have greater family satisfaction and greater organizational commitment. Based on this evident the following hypothesis was tested:

Hypothesis 10: Facilitation mediates the relationship between self-efficacy and intention to stay

5.2 Mediation Effects of Family Satisfaction on the Relationship Between Self-efficacy and Intention to Stay
Family satisfaction is a cognitive appraisal and an emotional response to what was and what could be (Olson, 1986). Researchers have proposed that increased levels of work-family facilitation might be related to both greater job and family satisfaction (Edwards & Rothbard, 2000; Grzywacz, Almeida & McDonald, 2002). Hanson, Hammer and Colton (2006) emphasize that a transfer of positive valence affect, skills, behavior, and values promotes better role performance (Hanson et al., 2006). In this regard, the positive valence affect, skills, behavior, and values are content of self-efficacy that lead to enhanced role performance at work. High performance helps improve family satisfaction, by a greater commitment (Hanson et al., 2006). Therefore this study tested the following hypothesis:

**Hypothesis 11:** Family satisfaction mediates the relationship between self-efficacy and intention to stay.

### 5.3 Mediation Effects of Work-family Facilitation on the Relationship Between Internal Locus of Control and Intention to Stay

An internal locus of control implies a belief in personal power, control and influence over the outcome of events. While an external locus of control implies a belief that personal power has a minimal affect on the outcome of events, these being influenced by fate, chance and powerful others (Rotter, 1954). Since individuals with an internal locus of control personality (internals) were more likely to believe they had control over their live events, internals perceived fewer stressors (Brookings et al., 1985) that resulted in less strain (Siu et al., 1999) which provided an evidence that internals would be more likely to experience facilitation from work to family. The experience of positive mood as a result of facilitation at work will spill over to family domain. The satisfaction resulted from work will encourage as well as glue the workers to their organization and the following hypothesis was proposed.

**Hypothesis 12:** Facilitation Mediates the Relationship Between Internal Locus of control and Intention to stay.

### 5.4 Mediation Effects of Family Satisfaction on the Relationship Between Internal Locus of Control and Intention to Stay

Research has demonstrated that individuals with an internal locus of control personality were believe they had control over their live events (Brookings et al., 1985). Accordingly positive experience at work, including that related to job satisfaction, affected positive experience at home (Judge & Ilies, 2004), and this positive spillover functioned as motivation to individuals to remain with organization as from this engagement would allow family member to enjoy the fruit of their occupation (Judge & Ilies, 2004). Accordingly individuals with internal locus of control will have high spirit of organizational commitment that promote workers to remain working with the present organization. Based on the past research, this study hypothesized the following:

**Hypothesis 13:** Family satisfaction mediates the relationship between internal locus of control and intention to stay.

### 5.5 Mediation Effect of Work-family Facilitation on the Relationship Between Job Demands and Intention to Stay

Since work-family conflict implies that demands exceed resources that lead to limited role performance, this arrangement is expected to be related negatively to family satisfaction (Bellavia & Frone, 2005). Alternatively, the resources associated with work-family facilitation is expected to enhance role performance, thus increasing family satisfaction (Brockwood et al., 2003; Voydanoff, 2005b; Wayne et al., 2004). In addition to these direct relationships, work-family conflict was found to mediate relationships between work demands and family satisfaction, whereas studies that consider work-family facilitation as a mediator is not known (Voydanoff, 2002). Due to scarcity of data this study intended to examine work-family facilitation as mediating factor between job factors and intention to stay. From the above support, this study proposed:
Hypothesis 14: Facilitation mediates the relationship between job demands and intention to stay.

5.6 Mediation Effect of Family Satisfaction on the Relationship Between job Demands and Intention to Stay

Family satisfaction is defined as the response to present family functioning as compared with an individual’s inner sense of what is desirable (Olson, 1986). Satisfaction is a cognitive appraisal and an emotional response to what was and what could be (Olson, 1986). Researchers have proposed that increased levels of work-family facilitation might be related to both greater job and family satisfaction (Edwards & Rothbard, 2000; Grzywacz et al., 2002). Hanson et al. (2006) emphasize that a transfer of positive valence affect, skills, behavior, and values promote better role performance (Hanson et al., 2006). In this regard, the positive spillover between work and family should lead to enhanced role performance through the improvement of family satisfaction, by a greater social support (Hanson et al., 2006). Empirical evidence has supported this notion with Brockwood’s (2002) finding work-family positive spillover to be positively related to family satisfaction. From the above support, this study posited:

Hypothesis 15: Family satisfaction mediates the relationship between job demands and intention to stay.

6 MATERIALS AND METHODS

6.1 Sample and Procedure

The subjects of the study were single mother employees working either with government or private sectors. According to the Department of Statistics Malaysia (2000), single mothers is defined as (1) woman as the head of household; (2) widow or separated/divorced wife; and (3) unmarried woman that possess a child/children. In this study single mother was operationalized as a woman who was divorced and separated or a woman whom her husband had passed away. Record from the Ministry of Women, Family and Community Development showed that there were 24 registered single mother’s associations in Selangor and Kuala Lumpur Federal Territory. Due to time and financial constraints along with the limited capability of the researcher, only six out of 24 associations were selected through systematic random sampling to obtain samples for the study.

6.2 Measurement

6.2.1 Self-Efficacy

Self-efficacy is personality attitude and was assessed using 10 item of the Work-Family Conflict Self-Efficacy Scale (Cinamon, 2003) from two dimensions: self-efficacy and responsibility. The original measure was developed in Hebrew and later translated into English. Using a 7-point Likert scale, participants were asked to rate how confident they were in handling a given situation. The responses range from 1 (strongly inconfidence) to 7 (strongly confidence). A sample item from the self-efficacy is: “How confident are you that you could fulfill your job responsibilities without letting them interfere with your family responsibilities?” The scale was tested by Cinamon (2003) and resulted in reliability coefficients of 0.84. The reliability coefficient for the current sample is 0.82.

6.2.2 Internal Locus of Control

Internal Locus of Control was assessed by using Spheres of Control by Paulhus (1983). The scale contained 10 items representing two dimensions: self control (e.g., Most of what happens in my career is beyond my control) and self confidence (e.g., Every time I make a plan, I am very sure I can materialize it). Respondents indicated their degree of agreement/disagreement on a 7-point scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The reliability score for this scale in previous sample was 0.80, however slightly fall to 0.73 for the current sample.
6.2.3 Work-Family Facilitation
Work-family facilitation was measured with 7 items (e.g., I have developed skills in my job that are useful at home). Greenhaus and Powell (2006) adapted these items from existing scales in the literature (Grzywacz & Marks, 2000; Kirchmeyer, 1992; Stephens, Franks & Atienza, 1997; Sumer & Knight, 2001). Respondents were asked to indicate their degree of agree/disagreement on a 7-point scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The Chronbach alpha for this measure from previous sample was 0.78 and slightly higher (0.84) for the current sample.

6.2.4 Family Satisfaction
Family Satisfaction was measured using items developed by Reardon (1982). The scale contains 7 items (e.g., I am happy with the progress toward the goals I have for my family). Respondents indicated their degree of agreement on a 7-point scale ranging from (1) “strongly disagree” to (7) “strongly agree”. Higher scores indicated greater family satisfaction. The Chronbach alpha for this scale in previous sample was 0.87 while in the current study the alpha value is 0.85.

6.2.5 Intention to Stay
Intention to stay was measured by using the instrument developed by Weiss, Dawis, England, and Lofquist, (1967). The instrument measures respondents’ intention to leave/stay from two dimensions: intention to leave (e.g., I always thinking of resigning the job) and intention to remain with the organization (e.g., I have planned to remain with this organization to advance my career). Intention to stay was measured by reverse-coding items of intention to leave where respondents indicated their degree of agreement on a 7-point scale ranging from (7) “strongly disagree” to (1) “strongly agree” (reverse-coded). For items measuring intention to remain, respondents indicated their degree of agreement on a 7-point scale ranging from (1) “strongly disagree” to (7) “strongly agree” (normal-coded). The Cronbach alpha value in the current sample is 0.74.

7 STATISTICAL ANALYSIS
(i) In this study four types of statistical analyses were utilized. (ii) SPSS for Windows to calculate many of the descriptive statistics: mean, standard deviations, percentage, reliability coefficients and zero order correlations. Descriptive analysis was also used to report demographic data and to check the level of all independent, mediator and dependent variables. (iii) Pearson’s Product Moment Correlation to determine the linear relationships between quantitative variables between organizational and occupational characteristics, work-family facilitation, family satisfaction and intention to stay. (iii) Analysis of Moment Structures (AMOS) to examine the goodness of fit of the proposed model, and subsequently to estimate the structural coefficients pertaining to the hypothesized path model. The Structural Equation Modeling (SEM) was also used to verify the hypothesized relationships between organizational, occupational, work-family facilitation, family satisfaction and intent to stay in the organization. (iv) The Sobel’s z-test was then conducted to test the z-value to examine whether the mediators carried the effect of the independent variables on the dependent variable.

8 RESULTS
The respondents’ age ranged from 29 to 45 years (M = 39.6, SD = 3.63). About half of the total respondents (47%) aged between 30 to 40 years old and majority of the respondents (89.5%) were below 44. The study also revealed that 42.9% of the respondents had working experience of ten years and below, 35.4% of the total respondents had experience between 11 to 14 years and about 20% of the respondents (19.6%) had work experience between 15 to 20 years (M = 12.26, SD = 4.38) (Table 1). The income received by the respondents ranged from RM700 – RM4000 (M = RM1682.17, SD = RM692.72).

Most respondents (60.0%) earned between RM1001 to RM2000, with a very small number (5.4%) of respondents took the largest amount of income of between RM3001 to RM4000 a
month. The mean score for variables on a seven-point scale was as follow: Self-efficacy 4.74 (SD = 0.79), internal locus of control 4.42 (SD = 0.82), work-family facilitation 4.55 (SD = 0.99), family satisfaction 4.92 (SD = 0.90) and intention to stay 4.40 (SD = 0.94) (Table 2).

TABLE 1: Distribution of Respondents by Demographic Characteristics

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>M</th>
<th>SD</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>39.6</td>
<td>3.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 30 years old</td>
<td>1</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 – 35 years old</td>
<td>15</td>
<td>6.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 – 39 years old</td>
<td>98</td>
<td>40.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 – 45 years old</td>
<td>126</td>
<td>52.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Working Experience          | 12.26| 4.38 |           |            |
| Below 5 years               | 14   | 5.8  |           |            |
| 5 – 10 years                | 89   | 37.1 |           |            |
| 11–14 years                 | 85   | 35.4 |           |            |
| 15– 20 years                | 47   | 19.6 |           |            |
| 21– 24 years                | 4    | 1.7  |           |            |
| 25 years and above          | 1    | 0.4  |           |            |

| Income Per-Month            | 1682.17| 692.72|           |            |
| RM 1000 and below           | 42    | 17.5 |           |            |
| RM 1001 – RM 2000           | 144   | 60.0 |           |            |
| RM 2001 – RM 3000           | 41    | 17.1 |           |            |
| RM 3001 – RM 4000           | 13    | 15.4 |           |            |

Total: 240 100.0

8.1 Correlation Analyses

Correlation analyses results revealed that dispositional characteristics were moderately higher \((r = 0.458 \text{ to } r = 0.577)\) to work-family facilitation, family satisfaction and intention to stay. The findings from data analysis as presented in Table 2 shows that as the level of self-efficacy of single mothers increased, their level of facilitation also increased \((r = 0.537, p = 0.001)\). The result of the data analysis shows that as the level of self-efficacy of single mothers increased, their level of family satisfaction \((r = 0.551, p = 0.001)\), and intention to stay \((r = 0.507, p = 0.001)\) increased. The result also indicates that as the level of internal locus of control of single mothers increased, their level of facilitation increased \((r = 0.458, p = 0.001)\). Similarly as the level of internal locus of control of single mothers increased, their level of family satisfaction \((r = 0.577, p = 0.001)\), and intention to stay \((r = 0.471, p = 0.001)\) were also increased. For the occupational characteristics, job demands was positively related \((r = 0.082 \text{ to } r = 0.332)\) to work-family facilitation, family satisfaction and intention to stay. The findings from data analysis as presented in Table 2 also revealed that as the level of job demands of single mothers increased, their level of facilitation increased \((r = 0.332, p = 0.001)\) and at the same time their level of family satisfaction \((r = 0.177, p = 0.001)\), and intention to stay \((r = 0.082, p = 0.001)\) also increased.

TABLE 2: Means, Standard Deviations, Reliability and Intercorrelations of the variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Self</th>
<th>Control</th>
<th>Dem</th>
<th>WFF</th>
<th>FSat</th>
<th>ITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>4.74</td>
<td>0.79</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>4.42</td>
<td>0.82</td>
<td>0.565**</td>
<td>0.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dem</td>
<td>4.06</td>
<td>0.63</td>
<td>0.095**</td>
<td>-0.006</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WFF</td>
<td>4.55</td>
<td>0.99</td>
<td>0.537**</td>
<td>0.458**</td>
<td>0.332**</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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FCat Pearson Correlation
<table>
<thead>
<tr>
<th>Sig.value</th>
<th>.000</th>
<th>.000</th>
<th>.000</th>
<th>.000</th>
<th>.000</th>
</tr>
</thead>
</table>
ITS Pearson Correlation
| Sig.value | .000 | .000 | .101 |

Note: N = 240. ** Correlation is significant at the 0.01 level (1-tailed).
* Correlation is significant at the 0.05 level (1-tailed).

Cronbach Alpha reliabilities are shown in bold. M = Mean, SD = Standard Deviation, Self = Self-Efficacy, Control = Internal Locus of Control, Dem = Demand, WFF = Work-Family Facilitation, F Sat = Family Satisfaction, ITS = Intention to Stay.

8.2 Mediation Analyses
A series of mediation analyses were conducted to test the effect of work-family facilitation and family satisfaction as mediators in the relationships between self-efficacy and internal locus of control and intention to stay. Figure 1 shows that the direct effect of self-efficacy [Self] on intention to stay [Stay] was significant (pc = 0.120, p < 0.05). The indirect effects were estimated by products of direct effects. Thus, the indirect effect of self-efficacy [Self] on intention to stay [Stay] via work-family facilitation [Facilitation] was estimated by the product of the effect of self-efficacy [Self] on work-family facilitation [Facilitation] and the effect of the work-family facilitation [Facilitation] on intention to stay [Stay] which was (0.227**)(0.186**) = 0.042**. The indirect effect (0.042**) was weaker than the direct effect (0.120*).

Table 3 shows that the direct effect of self-efficacy [Self] on intention to stay [Stay] was significant (pc = 0.120, p < 0.05). The indirect effects were estimated by products of direct effects. Thus, the indirect effect of self-efficacy [Self] on intention to stay [Stay] via family satisfaction [Family] was estimated by the product of the effect of self-efficacy [Self] on family satisfaction [Family] and the effect of the family satisfaction [Family] on intention to stay [Stay] which was (0.088**)(0.482**) = 0.042**. The indirect effect (0.042**) was weaker than the direct effect (0.120*).

Table 3 also shows that the direct effect of internal locus of control [Locus] on intention to stay [Stay] was significant (pc = 0.165, p < 0.05). The indirect effect of internal locus of control [Locus] on intention to stay [Stay] via work-family facilitation [Facilitation] was estimated by the product of the effect of internal locus of control [Locus] on work-family facilitation [Facilitation] and the effect of the work-family facilitation [Facilitation] on intention to stay [Stay] which was (0.191**)(0.186**) = 0.036**. The indirect effect (0.036**) was weaker than the direct effect (0.165*).

The direct effect of internal locus of control [Locus] on intention to stay [Stay] was significant (pc = 0.165, p < 0.05). The indirect effect of internal locus of control [Locus] on intention to stay [Stay] via family satisfaction [Family] was estimated by the product of the effect of internal locus of control [Locus] on family satisfaction [Family] and the effect of the family satisfaction [Family] on intention to stay [Stay] which was (0.074**)(0.482**) = 0.036**. The indirect effect (0.036**) was weaker than the direct effect (0.165*). Summary of direct and indirect effects between variables as shown in Table 3.
TABLE 3: Direct and Indirect Effects of the relationships between self-efficacy, internal locus of control, job demands and intention to stay

<table>
<thead>
<tr>
<th>Dimension of Dispositional and Occupational Characteristics</th>
<th>Direct Effect</th>
<th>Indirect Effect via Work-family facilitation</th>
<th>Sobel Z-test</th>
<th>Result of Mediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>0.120</td>
<td>0.042</td>
<td>4.544</td>
<td>Partial</td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>0.165</td>
<td>0.036</td>
<td>3.473</td>
<td>Partial</td>
</tr>
<tr>
<td>Job Demands</td>
<td>0.047</td>
<td>0.029</td>
<td>3.319</td>
<td>Partial</td>
</tr>
</tbody>
</table>

8.2.1 Job Demands and Intention to Stay via Work-Family Facilitation

The direct effect of job demand on intention to stay as shown in Table 3 was significant ($pc = 0.047, p < 0.05$). The indirect effects on the other hand were estimated by products of direct effects. Thus, the indirect effect of job demands on intention to stay via work-family facilitation was estimated by the product of the effect of job demands on work-family facilitation and the effect of the work-family facilitation on intention to stay which was $(0.156**(0.186**) = 0.029**$. The indirect effect $(0.029**) was weaker than the direct effect $(0.047)$. This means that indirect effect of job demand on intention to stay was partially mediated by work-family facilitation.

8.2.2 Job Demands and Intention to Stay via Family Satisfaction

Table 3 shows that the direct effect of job demand on intention to stay was significant ($pc = 0.045, p < 0.05$) the indirect effects were estimated by products of direct effects. Thus, the indirect effect of job demand on intention to stay via family satisfaction was estimated by the product of the effect of job demand on family satisfaction and the effect of the family satisfaction on intention to stay which was $(0.060**(0.482**) = 0.029**$. The indirect effect $(0.029**) was weaker than the direct effect $(0.045*)$. This means that indirect effect of job demand on intention to stay was partially mediated by family satisfaction.

9 DISCUSSION

9.1 Correlation Analyses

From the analysis the finding supports the hypothesis that single mothers who possessed high self-efficacy also experienced high facilitation, although the r value showed that the relationship was moderate. This finding supports a research from Matsui and Onglatco (1992), who found a significant negative relationship between self-efficacy and vocational strain, and Bandura (1997), who described correlation and experimental studies demonstrating that high self-efficacy mitigated psychological stress by directly impacting sensitivity to stressors at work place. Therefore, the above hypothesis is supported. The result of analysis also supports the hypothesis that single mothers who possessed high self-efficacy also experienced high level of family satisfaction and intention to stay. In a research by Judge & Bono (2001), individuals higher in self-efficacy looked for more opportunities and experienced more success, they likely acquire new skills and perspectives, positive mood, confidence and even economic assets for use in the family and life (Judge & Bono, 2001). Support for this proposition was also cultivated by Erdwins et al. (2001), whose research demonstrated that high level of task-specific self-efficacy pertaining to job skills predicted lower levels of conflict between work and family and less intention to leave. Therefore, the above hypotheses are supported.

For the second variable, this finding supports the hypothesis that single mothers who possessed high internal locus of control also experienced high facilitation, although the r value showed that
the relationships was moderate. This finding supports a research that positive moods at work, including that related to job satisfaction, affected positive moods experienced at home. This positive correlation indicates that employees high in internal locus of control characteristics were more likely to experience positive spillover from work to family (Judge and Ilies, 2004). Thus, the above hypothesis is supported.

The result of analysis also parallel with the hypothesis that single mothers who possessed high internal locus of control also experienced high family satisfaction and intention to stay. This finding was aligned with a research by Lewis and Borders, (1995); Spector, (1986) concluded that an internal locus of control was related to higher job and family satisfaction that led to more loyalty to organization (e.g., Lewis & Borders, 1995; Spector, 1986).

The finding also similar with finding from Brookings et al. (1985) that concluded individuals with an internal locus of control were more likely to believe that they had control over events in their lives while internals perceived fewer stressors and therefore experienced less strain and had less intention to leave the organization (Siu et al., 1999). Therefore, the above hypotheses are supported.

The correlation coefficients among self-efficacy, internal locus of control and job demands and work-family facilitation, family satisfaction and intention to stay derived from the data analyses indicated that there were linear relationships among variables. The correlation coefficient among variables was between 0.006 to 0.577 which indicated that the relationships among variables were varies from negligible to moderate.

The result for correlation among variables could be summarized as the higher the level of dispositional and occupational characteristics, the higher the level of work-family facilitation, family satisfaction and intention to stay with the organization. The results also indicates that the higher the level of work-family facilitation the higher the level of family satisfaction and intention to stay with the organization. The detail correlations among variables are as presented in Table 2.

9.2 Mediation Analyses

The mediation analyses indicated that all the indirect effects of variables were weaker than the direct effects of variables. The indirect effect of self-efficacy [Self] on intention to stay [Stay] was partially mediated by work-family facilitation [Facilitation]. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero ($z = 4.54; p < .001$). In other words work-family facilitation was partially mediated the relationship between self-efficacy and intention to stay. The result indicated that self-efficacy trait could increase the work-family facilitation of single mothers which in turn would increase intention to stay with organization. Self-efficacy explained 23% of the variance in work-family facilitation and 12 % of the variance in intention to stay.

The indirect effect of self-efficacy [Self] on intention to stay [Stay] was also partially mediated by family satisfaction [Family]. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero ($z =1.544; p < .001$). This means that family satisfaction was partially mediated the relationship between self-efficacy and intention to stay. The result indicated that self-efficacy trait could increase the family satisfaction of single mothers which in turn would increase intention to stay with organization. Self-efficacy explained 20% of the variance in family satisfaction and 23% of the variance in intention to stay.

From the analysis the indirect effect of internal locus of control [Locus] on intention to stay [Stay] was partially mediated by work-family facilitation [Facilitation]. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero ($z = 3.473; p < .001$). The result reveal that work-family facilitation was partially mediated the relationship between internal locus of control and intention to stay.
This means that internal locus of control trait could increase the work-family facilitation of single mothers which in turn would promote longer retention with organization. Internal locus of control explained 19% of the variance in work-family facilitation and 0% of the variance in intention to stay.

The analysis also showed the indirect effect of internal locus of control [Locus] on intention to stay [Stay] was partially mediated by family satisfaction [Family]. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero (z = 1.681; p < .001). In other words, family satisfaction was partially mediated the relationship between internal locus of control and intention to stay. The result indicates that internal locus of control trait could increase the family satisfaction of single mothers which in turn would increase intention to stay with organization. Internal locus of control explained 19% of the variance in work-family facilitation and 0% of the variance in intention to stay.

Job demands indicated indirect effect of 0.047 stronger than its direct effect of 0.029. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero (z = 3.319; p < .001). In other words, work family facilitation partially mediated the relationship between job demands and intention to stay. The analysis of mediation effect of job demands to intention to stay through family satisfaction indicated indirect effect of 0.045 stronger than its direct effect of 0.029. The Sobel’s z-test indicated that the indirect effect of the independent value on the dependent value via the mediator was significantly different from zero (z = 1.225; p < .001). In other words, family satisfaction partially mediated the relationship between job demands and intention to stay.

10: IMPLICATION OF THE STUDY
This study has several implications on intention to stay as the research outcome from interaction between dispositional characteristics and its mediating variables. This study has established a kind of relationships between work-family facilitation and family satisfaction and how these variables help promote organizational commitment among employees. Besides, this study has built a new structure of relationships between dispositional characteristics to work-family facilitation, family satisfaction and intention to stay among employees.

First, from the field of human resource development (HRD) this study has established an additional insight about the relationships between work-family facilitation, family satisfaction and intention to stay among employees in Malaysia. This study concerted several theories and assumptions including Social Exchange Theory (Thibaut & Kelley, 1959), Positive Organizational Scholarship (POS) (Cameron et al., 2003); Ecological Systems Theory (EST) (Bronfenbrenner, 1979); Conservation of Resources Theory (COR) (Hobfoll, 1989) in a single model. Second, two antecedent variables were chosen on the basis of sampling across dispositional characteristic in order to broaden perspective about its relationships to work-family facilitation and family satisfaction on intention to stay. By testing the importance of personal attribute to an individual employee, new insights emerged regarding the work-family arrangement in general and work-family facilitation specifically.

Third, this study utilized the constructs of work-family facilitation and family satisfaction as mediating variables between antecedent factors and intention to stay; the factors that had not been well explored in education. These mediating constructs have proven to have influence on the employees’ decision to remain with the present employers. Understanding work-family facilitation provides value to family domain and it is important not only for family members and managers but also for expanding our understanding of the conceptual phenomenon of work-family facilitation.
11 : CONCLUSION
The primary focus of this research is to examine the level of intention to stay and its independent variables employed in the study with the intervention of mediating variables. Moving towards answering all the research questions and hypotheses, the study has been designed to examine the relationships of its exogenous and endogenous variables. Work-family facilitation and family satisfaction were examined as the mediating variables and how these mediating variables influenced single mothers’ traits of self-efficacy and internal locus of control and job demands to make decision on their intention to remain working with their present employers. The first and second mediators bridged the chain of correlation between the antecedent variables to the research outcome: intention to stay that lastly results in loyalty and cohesion among employees towards their organizations. Our findings suggest the importance of the dispositional and occupational characteristics through self-efficacy, internal locus of control and job demands and provide actionable elements to increase facilitation and satisfaction between work and family. A deeper understanding of the work-family arrangement will not be fully realized until researchers devote as much effort and energy to facilitation as has been devoted to conflict.

12 REFERENCES


Cross Border Virtual Entrepreneurship: Design of Flexible Entrepreneurship Courses for Versatile Student Delivery

Abstract

Cross Border Virtual Entrepreneurship (CBVE) refers to a Multilateral European project, which has been co-funded by the Lifelong Learning Programme of the European Commission. The objective of CBVE has been to improve the entrepreneurship competence of students through open and flexible, didactically-innovative and pedagogically-rich learning approaches. The project has aimed to strengthen structured entrepreneurial training opportunities and external network liaisons, in particular there where flexible learning approaches could be utilised to reach out to more diverse target groups. The CBVE project has resulted in an incubating (virtual) business-planning environment, as well as an off-campus Masterclass entrepreneurship in English, Hungarian, Estonian, Italian and Spanish. Apart from the Internet, the multilingual Masterclass has also been broadcasted through the (free-on-air) satellite infrastructure RAI NETTUNNO SAT1, across Western, Central and Eastern Europe, the Mediterranean and across North America.

Keywords: Entrepreneurship, Virtual Business Planning, Business Training, Open and Distance Education.
1. RESEARCH OBJECTIVES

Entrepreneurship is influenced by a number of factors. The importance of learning about factors affecting entrepreneurship, whereas the addressing of more diverse and often non-traditional targets groups is concerned, increases ever more. Against the background of demographics i.e., entrepreneurship in later stages of life, and ethnical diversification i.e., cultural factors influencing entrepreneurship, CBVE aims to contribute to the body of knowledge of flexible approaches on entrepreneurship, those which can be used for flexible student-competency development. With innovative instruments and combined institutional approaches, CBVE has taken up the development of entrepreneurial competence for both traditional and non-traditional target groups through collaborative action between conventional and open universities. It develops professional skills of students by lifelong, open and flexible, didactically-innovative and pedagogically-rich learning approaches. CBVE pilots entrepreneurship in a novel way, as prospective part of the curriculum for students not particularly part of traditional cohorts. The aim is to have structured entrepreneurship education and external network liaisons, in situations where flexible learning approaches need to be utilised to reach out to more diverse target groups. By delivering off-campus Masterclass materials, the project infuses entrepreneurship by flexible learning elements. CBVE also contributes to the training of trainers i.e., the upgrading of entrepreneurial skills of academic staff involved. The interaction with the business community and regional stakeholders is vital to CBVE. It enables the experimentation with business-planning test beds and allows for external evaluation of student business plans. The project adheres to contemporary priorities of the European Commission, as explicitly mentioned in the Lifelong Learning Programme. In this respect, the CBVE project contributes to improving the existing quality and volume of ICT-based content and helps to promote creativity, competitiveness, employability and growth of the entrepreneurial spirit among students. Reaching out to learners, particularly those deprived of entrepreneurship teaching and those not being served by the traditional face to face system, shall substantially contribute to improve the access, inclusiveness and participation.

2. THE CONCEPT OF ENTREPRENEURSHIP

While it is widely acknowledged that entrepreneurship is a vital force in economies of developed countries, there is little consensus about what actually constitutes entrepreneurial activity. Scholars have proposed a broad array of definitions, which when operationalised generate a number of different measures (Herbert and Link, 1989), but the failure of a single definition of entrepreneurship to emerge, undoubtedly reflects the fact that entrepreneurship is a multi-dimensional concept. The definition used to study or classify entrepreneurial activities actually reflects a particular perspective or emphasis. Definitions of entrepreneurship typically vary between economic and management perspectives (Audretsch, 2006). Entrepreneurship has originally been conceptualised as an economic function, and the entrepreneur as someone willing to bear risk to make a profit. Although economics gave the entrepreneur a function in the market, it was eventually almost entirely eliminated in mainstream economics. It was then that behavioural science researchers attempted to develop theories of the entrepreneur (Cornelius et al., 2006). But by defining the field in terms of entrepreneurial attributes, entrepreneurship scholars “generated incomplete definitions that do not withstand the scrutiny of other scholars” (Gartner, 1988; Shane and Venkataraman, 2000, cited in Brown, 2006). Venkataraman (1997) defines entrepreneurship broadly as the process of discovering, evaluating, and exploiting opportunities, which go on to reify themselves in the form of new business ventures. In this model an entrepreneur could be defined as “someone who acts with ambition beyond that supportable by the resources currently under his control, in relentless pursuit of opportunity” (a definition common to entrepreneurship professors Howard Stevenson and Jeffry Timmons). Pinchot (1985) coined the term ‘intrapreneurship’ to describe entrepreneurial-like activities inside organisations and government. The concept is commonly referred to as ‘corporate entrepreneurship’. Still another view of entrepreneurship is that it is the process of exploiting opportunities that exist in the environment or that are created through innovation in an attempt to create value. Gibb (2005) defines entrepreneurship in terms of sets of behaviours, attributes and skills that allow individuals and groups to create change and innovation and cope with, and even enjoy, higher levels of uncertainty and complexity in all aspects of their life.
More generally entrepreneurship is the practice of starting new organisations, particularly new businesses in response to identified opportunities. Entrepreneurship mostly refers to the creation and management of a new business venture by an individual or a team. It refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk acceptance, as well as the ability to plan and manage projects in order to achieve objectives. In a broad sense, entrepreneurship should be considered as a mindset that can usefully be applied in all working activities and in life. Therefore, entrepreneurship is a key competence for all. Children can learn about entrepreneurship from an early age, with appropriate techniques both within the classroom and beyond. And as they get older, the range of skills and experiences relevant to entrepreneurship can be widened. At university level, there is also a need for specific courses to help students (particularly those with technological skills) to better appreciate the prospects of their work on the market. Finally, for those who have built up experience as an employee, the possibility to learn particular skills may allow them to set up or take over a firm later in life.

Researchers also attempt to define the entrepreneur in myriad ways and the debate over the definition of an entrepreneur continues today (Bygrave & Hofer, 1991; Gartner, 1990, cited in Brown, 2006). The Organisation for Economic Co-operation and Development (OECD) refers to entrepreneurs being persons who seek to generate value through creation or expansion of economic activity, by identifying and exploiting new products, processes or markets (OECD /Eurostat, 2008). Generally speaking, entrepreneurship is associated with entrepreneurial activity: acting as a driver of economic growth, productivity, innovation and employment. It causes firms to enter/exit the markets, and forces newcomers to be more efficient. Existing firms are forced to innovate in order to stay competitive i.e., the cause for creative destruction according to Schumpeter. Although entrepreneurship is also recognised by academic studies, it has only recently been explicitly discovered by policy makers. Policies on entrepreneurship differ nevertheless in OECD countries/regions. The different national and regional policies affect the rate and type of entrepreneurship. Some examples as to how and why policy can be developed for entrepreneurship are the following: simply for firm creation as such, as connected to regional development programmes (depressed regions), as strategic element to include certain target groups (minorities, women, etcetera), as for supporting domain specific starters i.e., high-tech starters, life sciences, and as decision to support especially high-growth firms (OECD/Eurostat, 2008).

Measurement of entrepreneurship is a relatively young phenomenon. There has been no real and systematic effort in comparing OECD countries. A first financial support from the Kaufmann Foundation was released to the OECD in 2005, so as to perform a feasibility study on improving entrepreneurship data. In late 2006, the OECD Entrepreneurship Indicators Programme (EIP) was coined. A certain willingness was made apparent by National Statistics Offices to actually harmonise methods. 12 OECD countries, World Bank and Eurostat joined a special steering group with the objective to develop indicators. In 2007, a formal OECD-Eurostat cooperation came into being, concerning the EIP for structuring and gathering policy relevant entrepreneurship statistics. Aside from the definition of entrepreneurship; actually measuring entrepreneurship seems a whole other case. Entrepreneurship as a variable seems to be multifaceted and non-linear. It appears that likely factors which influence entrepreneurship are mere proxies. We distinguish: factors that impede or motivate entrepreneurship (determinants), indicators for the amount/type of entrepreneurship (entrepreneurial performance), and outcomes of the performance on economy (impacts, value) (OECD/Eurostat, 2008). In Europe, the policy measures taken on entrepreneurship differ across regions. Policy makers and project developers focus on different incentives: regulatory framework, market conditions, access to finance, R&D technology, entrepreneurial capabilities, and the aspect of culture (OECD/Eurostat, 2008). In view of the above discussion, we are able to explain where the priorities of the CBVE project lie. For the CBVE project, we confirm the particular focus on improving ‘entrepreneurial capabilities’. More specific, CBVE has the prime focus on education in terms of stimulating ‘business and entrepreneurship education’, which has been defined as a subcategory under ‘entrepreneurial capabilities’ in OECD/Eurostat (2008).
3. GENESIS OF THE ONLINE MASTERCLASS

The genesis of the Masterclass entrepreneurship has involved the creation, development and testing of cutting-edge distance learning materials. The whole Masterclass resembles 2 European credit points (ECTS): corresponding to 50 hours of study load. The Masterclass is composed of 10 videolessons and supplementary didactic materials, available in English, Italian, Spanish, Hungarian and Estonian. All together, an English Masterclass as well as four associated derivative language versions have been developed (IT, ES, HU and EE) i.e., tailored to the other countries participating in the pilot-runs. Two of these partners i.e., the Universidad Nacional de Educación a Distancia (UNED) and the International Telematic University UNINETTUNO (UTIU), operate as distance universities, with consolidated IT support in their own e-learning framework. The others i.e., the University of Tallinn and the University of Miskolc, offer e-learning for their on-campus and off-campus students as a supplementary tool for improving the efficiency of learning processes and education programs. The added value of these profiles allows partners to adopt a multi-purpose and multi-dimensional delivery through a two-model approach: a distance university approach and a traditional university (blended) approach. Accordingly, the Italian, English and Spanish Masterclass courses are delivered fully online on the UTIU didactic platform (www.uninettunouniversity.net) being composed of 10 videolessons (and supplementary didactic training materials), available in Italian, English and Spanish. The Hungarian and Estonian Masterclass courses have been balanced and integrated using the same open source e-learning platform, Moodle, as their regular Virtual Learning Environment (VLE). For providing accessibility to developed learning materials from the same VLE, a joint portal (http://edu.uni-miskolc.hu) was implemented by the University of Miskolc. In all, a pedagogically-rich model for development and delivery of Masterclass materials has been developed, capable of serving a wide spectrum of target groups within the framework of lifelong learning.

The actual Masterclass recording and delivery have been done in a professional and systematic manner. Videolessons of the EN, IT and ES language versions of the Masterclass have been recorded at the UNINETTUNO Production Centre in Rome, endowed with all the structures and facilities needed for the professional production of multimedia educational products (i.e., videolessons, slides, and multimedia products), and with the support of the technical staff involved in the production. Since many lessons are included in one Masterclass and each videolesson lasts approximately 45 minutes, the labour intensiveness of video recording is evident. In many cases practical arrangements are made on location, so as to enable video professors to fulfil the recording process efficiently. In many cases, video professors must be lodged in a guest room. A production plan was devised for the production of the Masterclass, which included (1) the sharing of the production phases, (2) the time schedule for producing every didactic material, (3) the subsequent digitisation, and (4) the posting of materials on the Internet site. On the basis of the production plan, thirty videolessons were produced: among them ten in Italian, ten in English and ten in Spanish. The (ten) Hungarian and (ten) Estonian Masterclass derivatives were produced with a slightly different practical accent. The Hungarian version has been recorded and edited domestically, on-site at the University of Miskolc, while the Estonian version was produced as subtitled version of the English master course. Both universities supplemented the videolessons by different additional resources and instructions, as required by their specific educational programs. The designated persons which were in charge of recording the videolessons in the different languages, needed to comply with detailed procedures, already fairly tested, and essentially aimed at producing the educational content and facilitating the activities related to the processing and online publishing of the educational materials. In actually devising the Masterclass, UNINETTUNO’s videolessons’ methodology was used: a methodology built upon a strong foundation of didactic and communication models (Henri and Rigault, 1996; Kass, 1996; Garito, 2007, 2006, 2001, 2000a, 2000b, 2000c, 2000d, 1998, 1997a, 1997b, 1996; Horowitz and Samuels, 1987). The upcoming sections present the structure, the recording and the delivery of the Masterclass, based on this methodology.

A theoretical and practical training has been delivered to the professors involved in the production of educational content, strictly related to the competence skills essential for implementing lectures
in a novel and pedagogical-rich education model. Such training was (also) envisaged within the project by means of ‘training the trainers’. It basically concerned the training of the professors involved in producing the videolessons. Guidelines for realising videolessons (also) included the use of didactic communication on television, in the frame of psychological research work on learning theories, paying particular attention to the constructivist and cognitivist theories. In addition, special guidelines for realising slides were presented: this was facilitated by the UNINETTUNO Graphics Department. The training of the tutors (instead), took place later, after the pilot had been delivered. Students had the choice of videolessons’ intake in several ways: through Internet in Didactic Cyberspace (Video Library Sections), as well as through satellite broadcast on the channel RAI NETTUNO SAT 1. Associated videolessons consisted of modular contents, indexing of lesson themes, and bookmarks. A graphic icon represents a connection to the learning object. Each videolesson is subdivided into topics and is created with a predefined indexing system, which allows flexible usage. A student can view the entire videolesson in a linear fashion or follow a non-linear itinerary, thus choosing the topics that one wishes to study more in-depth, along with the connected study materials. The slides presented by the video professor during the videolesson(s) constitute an important support tool for study: the student can use them as a basis for notes, a means by which he/she can create his/her own network of links between topics. The videolessons, with the accompanying slides, are enriched with didactic materials known as learning objects. They emerge during the course of the videolesson by an icon link (bookmark) and are made available in the Didactic Cyberspace of the Internet site. Such support materials comprise: books and articles (extracts, study sheets), CD-ROM or DVD, exercises (with answers), virtual laboratories, annotated bibliographies, and annotated site links. The modular organisation of the course, the indexing of the topics and the bookmarks allow for a multimedia and hypertextual learning process, and encourages a more personalised study path. The Masterclass materials enable the student to prepare him/herself in a more comprehensive manner: utilising the possibility of in-depth study of topics raised in the videolessons, including the ins and outs of any practical application of the concepts learned. The web interface for the transmission of the videolessons is presented in Figure 1.

![Figure 1: The Web Interface of UNINETTUNO](image_url)
course had to fit a blended delivery: implying the supplementing of different collaborative elements. As part of the blended delivery approach, a wide range of new, versatile content elements and pedagogy has been added. This approach has enabled the University of Tallinn and the University of Miskolc to adopt a multi-purpose and multi-dimensional delivery, reaching out to a wider spectrum of target groups within the framework of lifelong learning. The core content of the courses – similar to the EN, IT and ES courses – are also video lectures. Similarly, students are offered easy navigation: a content list apart from the video film shows titles of ppt slides, synchronously presented with the video. By clicking on the titles, one can jump to any slide at any time. When ones stops, and logs out, the program still remembers, where to continue. Powerpoint files are available for students to make printed versions and make notes while watching the presentation. A wide variety of learning support – offered by the Moodle platform – is available for the students to utilise: forum, blog, messages, tests, notes, and glossary. Staff training for academics and professionals has also been organised in a blended methodology. A separate course was developed for staff training purposes: guidelines, presentations, useful links and templates, both in English and Hungarian.

4. PILOTING: A DUAL-TRACK DELIVERY MODEL

Parallel to the content development process, discussions commenced about the models to deploy in the practical engagement towards students: the test beds. The versatility of needs in partner institutions was investigated as well as presence of common practices. Important to distinguish is that the Universidad Nacional de Educación a Distancia and the Università Telematica Internazionale UNINETTUNO, operate as open and distance teaching universities: having robust IT support in their own e-learning framework. The other universities, i.e., the University of Tallinn and the University of Miskolc, operate as traditional universities: implementing e-learning in a blended learning approach, in versatile levels within their education programme. These different profiles within the test beds, were acknowledged rather as an added value instead of a restriction. A presence of the different institutional profiles and educational modalities, enabled the evaluation of versatile target groups. Accordingly, the ODTUs i.e., the off-campus universities, forwarded a distance model for educational delivery, whereas the traditional universities i.e., the on-campus universities, forwarded a blended model for educational delivery. Pilots were realised in two different ways with relevant ‘fit for purpose’ platforms. The Italian, English and Spanish Masterclass versions were implemented on the UTIU e-learning platform, whereas the Hungarian and Estonian Masterclasses were implemented on the Moodle platform. In addition, all partners agreed that the Masterclass versions had to be accessible by cross-referencing, herewith enabling access for all students, to all derived Masterclass language versions, at any time, independent of local platforms. University of Miskolc implemented and operates a dedicated Moodle VLE for the project.

4.1 Track One: Distance Delivery Model

In this section, the UNED distance delivery model is explained. The UNED model comprises of three Phases. In Phase I, the students present their business idea. The idea is evaluated and commented upon by the teachers. Subsequently, the students’ ability or capability as an entrepreneur is evaluated by using a special test. In Phase II, after the review of the course materials, the students start with their business plan. In this phase, the students seek advice from the teachers or from experts and professionals stemming from a particular sector. When the business plan is completed, the teacher evaluates it. The teacher either accepts or rejects it. Phase III commences when the students receive feedback from the teacher. When the business plan is accepted, the students apply Business Simulation Games to test the plan profoundly. To round up the business plan, students communicate the results of simulation by means of a final report.

The essence of the UNED business planning trial was to train students to be able to develop a business plan, which could (then) lead to new business creation among participants, if they joined an Administration Programme for Business Creation, or if they would be capable of obtaining financial support from funding institutions. To qualify for entry, applicants did not require a special qualification, they just needed to have a business idea at feasibility or pre-feasibility stage. The
programme was designed for distance and virtual education, thus participants could be employed, unemployed or continuing their education. The business planning trial was attended by 14 students. The total programme had a duration of about six months. From a methodological point of view, the aim of UNED was to craft a business planning concept that could meet the rigors of academia while keeping a reality-based focus and entrepreneurial climate in the learning experience environment. The UNED test bed was operated in conjunction with the Italian e-learning platform of UNINETTUNO, from which the Masterclass materials were delivered. Accordingly, students from UNED (Spain) retrieved their Masterclass materials from Italy. Simultaneously, this meant that the Masterclass was a test bed for international virtual student mobility.

A dedicated group of professors had been selected to monitor the quality of the work of the students and to offer support to the students. The role of the teacher was to act as consultant to the student and to provide coordination on the parts of the business plan. In addition, independent consultants’ support was available to the students to render professional advice. With regard to students’ learning objectives, UNED distinguishes a compulsory part and a facultative part. The compulsory part includes assessing the students on their entrepreneurship competences by screening business ideas, selecting most viable ones, and designating students to work on associated business planning. The facultative part consists of presenting the developed business plans to funding institutions, as a viability test. On success, students could initiate the start of their business.

4.2 Pilot Outcomes
The main aim of Phase I was to analyse the entrepreneurial capacity of the students and their business ideas. Information gathered in this stage, included a range of self-ratings on personal characteristics, on knowledge and skills, and on other aspects, which are described next. First of all, students had to list five arguments/reasons that could explain why he or she would qualify as self-starter or entrepreneur (Table 1). The student had 18 possible choices to pick from. Teachers evaluated the coherence of the answers and classified the answers into categories. Most of the students answered in a logical manner. The response rate was 57.14% per cent.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great capacity for work</td>
<td>5</td>
</tr>
<tr>
<td>Capacity to plan and organise</td>
<td>4</td>
</tr>
<tr>
<td>Capacity to take initiative</td>
<td>4</td>
</tr>
<tr>
<td>Capacity to get along with different personalities</td>
<td>3</td>
</tr>
<tr>
<td>Capacity to assume risks</td>
<td>3</td>
</tr>
</tbody>
</table>

Then, the students had to self-rate (scale 1 to 5) their personal characteristics (Table 2). The students also had to choose 5 factors that would indicate the success and failure of a business (Table 3). Following, the students would assign a percentage to that factor and evaluate their personal position in relation to the factor. The evaluation ranking goes from 1 (very weak) to 4 (very strong). A score over 400 means that the student has a strong position whereas below 250 implies that the position of the student is weak.
TABLE 2: Self-rating of Personal Characteristics

<table>
<thead>
<tr>
<th>Your situation</th>
<th>4</th>
<th>5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical and psychological characteristics</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>Your knowledge and aptitudes</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>31</td>
</tr>
<tr>
<td>Time availability</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Strong motivation</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>36</td>
</tr>
<tr>
<td>Support and trust from your family</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>Our social environment</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>25</td>
<td>22</td>
<td>20</td>
<td>25</td>
<td>22</td>
<td>25</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 3: Factors influencing the Success of the Business

<table>
<thead>
<tr>
<th>Success or failure factors</th>
<th>Importance</th>
<th>Evaluation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of sector</td>
<td>8%</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Location</td>
<td>10%</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Financial resources</td>
<td>25%</td>
<td>3</td>
<td>75</td>
</tr>
<tr>
<td>......</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>......</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
<td>250&lt;Total&lt;400</td>
</tr>
</tbody>
</table>

In order to analyse the business idea, the students had to present their business idea and give at least three reasons that would support the idea. An example hereof is provided in Table 4.
TABLE 4: Supportive Reasons for Business Creation

<table>
<thead>
<tr>
<th>Business Idea</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursery School in Madrid</td>
<td>1. Demand in the area is saturated</td>
</tr>
<tr>
<td></td>
<td>2. Stable income and possibilities for growth</td>
</tr>
<tr>
<td></td>
<td>3. It is a need for couples when both are working</td>
</tr>
<tr>
<td>Rural Cottage in Asturias</td>
<td>1. Rural tourism is a sector that is growing in Spain</td>
</tr>
<tr>
<td></td>
<td>2. Supply is far from being saturated</td>
</tr>
<tr>
<td></td>
<td>3. The student is the owner of the house. That will reduce the amount of the initial investment</td>
</tr>
</tbody>
</table>

In order to round up Phase I, the students had to describe the process of their business and the financial resources required to actually start up the business. This gave the teacher and/or tutor a good idea of the students’ knowledge along with the potential needs for the remainder of the business planning pilot. At the end of Phase I, six of the students left the course i.e., did/could not continue. Phase II was the actual business planning phase. The participants needed to prepare their business plan of the selected project. It included work on different disciplines: marketing, production, organisation and financials. Seven students went on to present their business plan. Phase III was devoted to simulation and/or to the viability test. In this final Phase, participants were provided with the opportunity to defend their business plan in front of a panel of academic and professional experts. All the students succeeded in doing the feasibility study. Despite the fact that simulation software was available, most students preferred to have their business plan evaluated by teachers of the course. The reason hereof was that the simulation software was regarded as too general and too much oriented towards traditional academic purposes. It did not properly match the needs of a potential entrepreneur. Four students expressed their intention to actually start their own business in the following months. Table 5 shows a summary of the outcomes of the UNED course pilot.

TABLE 5: Outcomes of the UNED Pilot Model

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Method</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compulsory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess their entrepreneurial competencies</td>
<td>Results of examination</td>
<td>57.14%</td>
</tr>
<tr>
<td>Screen business ideas and select the most potentially viable business project</td>
<td>Results of examination</td>
<td>57.14%</td>
</tr>
<tr>
<td>To be able to develop a business plan</td>
<td>Results of examination</td>
<td>50.00%</td>
</tr>
<tr>
<td>Entrepreneurial Skills</td>
<td>Results of examination and the kind of methodology (business plan)</td>
<td>50.00%</td>
</tr>
</tbody>
</table>
### Additional Proposals presented to funding institutions

<table>
<thead>
<tr>
<th></th>
<th>Number of students that have presented a proposal to a funding institution</th>
<th>0.00%-28.57%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business creation</td>
<td>Number of students that have started a business</td>
<td>0.00%-28.57%</td>
</tr>
<tr>
<td>Entrepreneurial competences</td>
<td>Number of students that have had an accepted proposal from a funding institution</td>
<td>0.00%-28.57%</td>
</tr>
</tbody>
</table>

Some students dropped out of the course mainly due to personal reasons, for example, because they found a job. From the project’s point of view, there is no doubt that the CBVE consortium together with UNED, did achieve the full objective of developing a virtual course with rich materials. Students were even able to complement the Masterclass with other didactical instruments, as UNED had prior experience with distance learning and with entrepreneurship education. With respect to the objective of delivering a virtual course in entrepreneurship, this can now be confirmed as being achieved fully, with such phases of motivation, assessment of entrepreneurial competences, and start-up assistance, included. ‘Motivation’ particularly deals with the screening of business ideas and the selection of the most viable business projects. ‘Assessment’ deals with entrepreneurial competences: assessing the entrepreneurial competences of the students participating in the course and reflecting on their capabilities to perform in an entrepreneurial context. ‘Start-up assistance’ deals with the assistance provided by the Administration Programme for New Entrepreneurs, enabling funding for a new venture. It proved that the best way to implement the UNED model was by having it coincide with the Administration Programme, which provides for necessary funding of new entrepreneurs.

### 4.3 Track Two: Blended Delivery Model

The pilot with the Moodle platform at the University of Miskolc was organised in 3 phases, aligning with the curriculum of the Faculty of Economics and adhering to specific needs of Hungarian SMEs. In the academic year 2008/09, two parallel pilot courses were launched in Semester 1.

- In the frame of the course ‘Business Planning’, a first pilot was conducted. The target group comprised of full-time students in their 3rd year (5th semester) of the BA programme at the Faculty of Economics. This first pilot model allowed for a gradual introduction of the virtual environment, in a blended learning approach. The first period of the course was delivered mainly in a traditional classroom situation, however ppt presentations became available for learners to get them gradually involved in the virtual collaborative space. By the end of the semester, groups of 3-4 students developed their own business plans, which was the dedicated, core objective of the course. Creativity and fresh ideas of the learners were presented in project reports (60-80 pages in pdf files), highly illustrated and precisely detailed. The best of their presentations have been recorded and edited as videolectures – very attractive and creative presentations confirmed the improved skills of the learners. Some of the project reports and presentations received prizes in the Scientific Student Competition and Conference.

- In the frame of the course ‘Business Economics’, a second pilot was conducted. The target group comprised of a mixed group of 6 foreign students, studying at the University of Miskolc through an Erasmus scholarship (1 Finish, 2 Polish, 2 Bulgarian, 1 Turkish).

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1 Four students have expressed their intention to start a business in the following months.
and 7 Hungarian students. Pilot 2 had several differences as compared with Pilot 1 – in this case an international group of Erasmus students took part in a course aimed at more collaborative learning, modelling and development of the entrepreneurial skills, in different situations and business games. During the course, students were very active, as has also been video-recorded. Next to simulating a real business environment in an international collaborative learning scenario, multicultural aspects of business life, were also important in the course. At the end of the semester, foreign students organised an international breakfast – inviting each other to taste ones traditional food and presenting ones country, culture, values and traditions.

- In the spring semester of the academic year 2008/09, in frame of the course ‘Legal aspects of SMEs in Hungary’, the third pilot was executed. The target group comprised of full-time students in the 2nd semester of a MA programme, specialised in Entrepreneurial Studies at the Faculty of Economics. This pilot again involved a large number of learners. Its thematic content focused on a specific subject of SMEs – legal aspects and legal environment. These subjects were highlighted in the presentations delivered by the teacher and the students’ projects. Learning material included a large collection of specific case studies. Further reading was offered to the students on the platform. The final reports of the students were submitted electronically and were evaluated by the teacher. Peer review and video-recorded presentations were similar to the methodology used in pilot 1.

- The fourth pilot was performed in frame of the course ‘Development of Entrepreneurial Skills Business Games’. The target group comprised of full-time and part time students in their 4th semester of a BSc programme specialised in Entrepreneurial Studies, at the Faculty of Economics. Pilot 4 aimed at extending the collaborative learning scenario. Similar to Pilot 2, business games as simulation of real business environments, were among the core activities. Besides presentations, case studies and further reading, several video illustrations provided support to improve specific skills for entrepreneurship e.g., conflict management, communication, protocol, and body-language. In addition, tests were offered for self evaluation of the developed competences. In the course, part-time i.e., correspondence learners, were also involved, forming a group of students with very different backgrounds, experiences and motivation.

- A fifth pilot was conducted in frame of the course ‘Development of Entrepreneurial Skills for adult learners starting a new business’. The target group comprised of adult learners who participated in a project organised by the Chamber of Commerce and Industry of Borsod County (BOKIK). The project had the objective of stimulating regional employability and competitiveness. The project offered a two-phase training programme for adult learners, mainly for unemployed people or SMEs just starting their business. In the first part, face-to-face lessons (classroom seminars) were delivered by the experts of BOKIK. The venues of these trainings were located in the neighbouring small towns. In the second phase, the University of Miskolc was commissioned to establish an electronic learning environment for these learners, continuing their studies in a sophisticated manner through more advanced delivery models, providing access to a wider variety of information resources. Based on a mutually beneficial agreement, in frame of the 5th pilot, the adult learners received access to the Hungarian Masterclass video lectures, as well as to some selected business planning reports, developed in the earlier stages of the project, by students. Staff training of BOKIK experts on how to use the electronic learning environment and the learning materials, was organised (also) as an activity of the University of Miskolc.

All the 5 pilot courses followed different approaches and had different methodological aims. The pilots 1-4 were integrated into the mainstream curriculum of full-time and part time students. All the programmes were delivered in a duration of 14 weeks. Evaluation and assessment of the learners’ progress was carried out according to the regular assessment process, so results and
The effectiveness of applying Masterclass methodology were measurable in comparison with the traditional delivery method. Progress of students was continuously monitored and students received support from course tutors. The final project reports (native Hungarian) were submitted electronically in pdf – with the supplement of an English summary - and were presented to the classmates. Peer review and evaluation had in some cases been extended to an institutional and national student research competition, where (also) external evaluators assessed the students’ project (semester report) results.

4.4 Pilot Outcomes

The development of a wide range of versatile learning materials as well as the delivery of pilot courses within the CBVE project at the University of Miskolc, have significantly contributed to the extension of the education activities within the University of Miskolc, and have contributed to stimulating the establishment of regional SMEs. For each specific pilot conducted, more detail is presented next. Table 6 depicts characteristics of the pilots. Participants of the pilot courses – both students and tutors – received certificates as a recognition of attendance.

<table>
<thead>
<tr>
<th>TABLE 6: Outcomes of the Pilots delivered in Hungary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phases</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Pilot 1</td>
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<tr>
<td>Pilot 2</td>
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<tr>
<td>Pilot 3</td>
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<tr>
<td>Pilot 4</td>
</tr>
<tr>
<td>Pilot 5</td>
</tr>
<tr>
<td>Total of Pilot 1-5</td>
</tr>
</tbody>
</table>

During the project, the pool of content elements, was continuously enriched. Some attractive video films (video case studies, video illustrations and tests) produced in former national projects were also re-used and re-edited for (additional) illustration of entrepreneurship. All video lectures were recorded by different professors/lecturers, demonstrating the high level of support and commitment of the Faculty of Economics. Active involvement of the Chamber of Commerce and Industry of the county Borsod, can be indicated as a valuable feature of the Miskolc CBVE collaborative model. As part of this collaboration, the Secretary General of the Chamber gave a presentation – also video-recorded – and adult learners from three neighbouring towns enrolled to test the Hungarian Masterclass, coordinated by the Chamber. The Chamber also contributed to dissemination activities e.g., newsletter and distribution of leaflets. Both regular student cohorts and the adult learners were delivered the same courses from the same electronic environment: the experience and interaction with these two learner groups was regarded as an unique learning opportunity. Table 7 provides an overview of the teacher and student generated content.
TABLE 7: Teacher and Student Generated Content

<table>
<thead>
<tr>
<th>Pilot No.</th>
<th>File format</th>
<th>Teacher generated content</th>
<th>Learner generated content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>slide</td>
<td>page</td>
</tr>
<tr>
<td>Pilot 1</td>
<td>ppt</td>
<td>335</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doc/pdf</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>photo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot 2</td>
<td>ppt</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doc/pdf</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td>photo</td>
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<td></td>
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<tr>
<td>Pilot 3</td>
<td>ppt</td>
<td>464</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doc/pdf</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Video</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>photo</td>
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<td></td>
</tr>
<tr>
<td>Pilot 4</td>
<td>ppt</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doc/pdf</td>
<td>163</td>
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<tr>
<td></td>
<td>Video</td>
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<td>Pilot 5</td>
<td>ppt</td>
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<td></td>
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<td></td>
<td>Video</td>
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</tr>
<tr>
<td>Total of Pilot 1-5</td>
<td></td>
<td>1229</td>
<td>357</td>
</tr>
</tbody>
</table>

The results from the University of Miskolc, illustrate the paradigm shift initiated by Web 2.0 technologies: shifting focus from education materials and technology towards user-student, and beyond - towards (more) user-generated content. Thousands of pages and hundreds of slides were produced through user-generated content. Also, video presentations and video illustrations up to 8 hours in total, were developed by the learners in the different pilots. Overall, the students worked on different projects and developed plans for creating their own business. The project reports were published on the course site, through the Moodle platform. By the end of the semester, all students presented their work in a seminar - and some of these presentations were recorded on video as well. Presentations were documented by ppt files and video lectures - using the same methodology as used in editing and publishing lectures of the academics. In addition to the asynchronous e-learning scenario, a final seminar was organised between Miskolc and Tallinn utilising Videoconferencing for direct communication, exchange of experiences and evaluation of the pilots, at the end of the project. Not only the local project coordinators and tutors, but also some students involved in Pilot courses joined the videoconference on 29 September, 2009. An edited version of the recorded video was published in a separate unit of the “Staff-only” part of the CBVE Moodle portal.

5. COMPARATIVE EVALUATION OF THE DELIVERY MODELS

With literature being poor on evaluation of online delivery models concerning entrepreneurship courses, a comparative evaluation is proposed on the piloted models using a SWOT analysis i.e.,
strength, weakness, opportunity and threat analysis. Such an analysis provides an additional critical reflection on the results obtained, and on the improvements to be made for the future. The recommendations found, are presented in the frame of the two models: the full online model first, followed by the blended model.

As far as we can distinguish internal and external attributes for the workings of the different models, we can pose that the full online model can be characterised by the following internal attributes, helpful in achieving the objective: (1) keeping a reality-based focus and fostering an entrepreneurial climate, (2) meeting the rigors of academia, (3) generating online educational materials such as the Masterclass, hyperlinks and other files, (4) the feasibility of creating of a complete online course in an e-learning platform, (5) having a tested methodology at hand from distance education, which could be adapted, and (6) application of the know-how of the teachers involved. However, signalled as internal attributes which were sensed to be harmful to the objective: (1) course materials could be improved, (2) lack of strategic knowledge, (4) course could be complemented with lectures by business owners and virtual internships, (5) the course does not support the student to start a business, by lack of supporting financial programme, (6) the lack of finances for advice of independent consultants, and (7) software available is too general to meet students’ needs for simulating a business. We distinguish not only internal but also external attributes. The online model is characterised by the following external attributes, helpful in achieving the objective: (1) absence (in distance education) (in some countries, such as Spain) of online courses offered by competitors, (2) the failure of traditional business education to meet the goals of students in a flexible manner, and (3) entrepreneurship courses are more and more in demand both in the United States and in Europe. However, signalled as external attributes, which were sensed to be harmful to the objective: (1) competitors programmes and courses with sustainable financial backing, (2) the increase of entrepreneurship courses within the curricula of official studies, and (3) new approaches to entrepreneurship education which may shift into maturity stage.

As far as we can distinguish internal and external attributes for the workings of the different models, we can pose that the blended model can be characterised by the following internal attributes, helpful in achieving the objective: (1) flexibility and reusability of content elements, (2) versatility of courses, fitting to different learning needs, (3) blended methodology for improving efficiency of education, (4) involvement of regional stakeholders and strategic partners such as chambers of commerce and industry, (5) mixing of individual and collaborative learning scenarios, and (6) the presence of know-how by the teachers involved. However, signalled as internal attributes, which were sensed to be harmful to the objective: (1) students’ needs increase more faster than the pedagogical approaches of teachers, (2) lack of experiences and human resources, several features and functions offered by the virtual learning environment have not been implemented, (3) due to the economic crisis, starting a new business has become more risky – changes in the economic and legislative environment would need attention, (4) advisory support should be offered for a longer period, and (5) the need for dedicated simulation software. As far as we can distinguish internal and external attributes for the workings of the different models, we can pose that the blended model is (also) characterised by the following external attributes, helpful in achieving the objective: (1) urgent needs for training SMEs – economic restructuring in regions is critical, (2) visibility of the results of regional collaboration, (3) exchange of experiences in international collaboration - improved creditability, and (4) a multilingual environment: improving language skills of learners. However, signalled as external attributes, which were sensed to be harmful to the objective: (1) learners cannot finance the studies themselves – other training programmes gain governmental financial support and offer more recognition, (2) lack of support for marketing, (3) competitor programmes and courses with more stable financial background and human resources, and finally (4) new demands for tools in e-learning such as mobile learning, may increase the cost of delivery.

6. FINAL REFLECTION AND CONCLUSIONS
The evaluation of Masterclass got high scores and the supportive role of the teacher was praised. However, from the viewpoint of blended delivery, the Masterclass should best link to more
practical (project) work. When referring in particular to adults students, too much theoretical concepts could become annoying. Adult students have a lot of prior knowledge: they are not students in the regular meaning. For this particular group, it makes pedagogically sense to link theoretical concepts directly to project work, herewith allowing them to adopt a practical approach to develop entrepreneurial skills. It should be noted though that both models i.e., distance and blended, have been designed with the notion of serving two different target groups i.e., different institutions, environments and recipients i.e., off-campus and on-campus. The blended model was above all, aimed at traditional universities in which courses constitute face to face interactions and students cooperate in a classroom environment. As far as the distance model was concerned, it was prepared specifically for online teaching, as distance students do not have possibility to take part in face to face meetings. For the CBVE project as a whole, the Masterclass has been one of the main drivers of success: initially being developed for off-campus usage, it also proved effective when infused in, and adopted for, the blended learning environment. The Masterclass proved quite versatile in its application.

We may acknowledge that the Masterclass constitutes quite well the nucleus of an autonomous-learning course, for both on-campus and off-campus usage: with the power of adding and enriching additional materials and project work for more in-depth study of subjects. As for extension and exploitation, the step ahead can be the widening and strengthening the European and international dimension of course delivery, offering joint delivery for mixed group of learners, in an international collaborative context. The strength of the Masterclass really lies in its versatility: flexible extension in terms of specialised content, as well flexible extension in terms of student assessment methodologies. Accordingly, it is important to continue the process of enriching the Masterclass over time. This is not to say that only new content elements should be added in a repository for blended learning, or that complete video lectures should be generated for online learning, no we must also pay attention to methodologies which can effectively assess the robustness of the created business themselves. Our final thought is on exactly this. In our experience, simulation software did not fit the purpose.

It appeared more effective to use scenario-driven methodologies, generating alternative scenarios for the assessment of a firm: best -, normal - and worse case scenarios. In this approach, each sector allows the use existing formulas to determine the degree success or failure, by using indicators such as ‘population living in the area’, ‘investments’, and other indicators. Using alternative methodologies, such as scenarios, may effectively help us better understand the uncertain future(s) of created business. The principal advantage of using scenarios instead of simulation software or business games is that this method allows the inclusion of factors that are difficult to formalise, such as novel insights about the future, deep shifts in values, unprecedented regulations or inventions; and because the causal relationship between factors can be demonstrated.

The research work discussed in this paper, has been granted to proceed with new financial support of the European Commission by approval of the Erasmus project ‘Cross Border Virtual Incubator’, which started in 2011 and will run until 2012 (http://www.eadtu.eu/cbvi.html). It will focus on the power of open and networked media to empower starters in their endeavour.

7. REFERENCES


CRM Implementation in Indian Telecom Industry – Evaluating the Effectiveness of Mobile Service Providers Using Data Envelopment Analysis

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Abstract

With the liberalization and internationalization in telecommunication, service quality has become an important means of differentiation and path to achieve business success. Faced with a growing market and increasing competition, companies in the telecom business are adopting to new technological imperatives in order to outperform their competitors. These companies adapt continuously to the dynamic environment so as to survive competition. The emphasis here lies in identifying critical value adding processes and redesigning them to become customer centric. One such approach in the adoption of an IT to move towards customers is the Customer Relationship Management (CRM). The Indian Mobile Service Providers are using CRM extensively to identify the needs of the customers and stretching out ways and means to satisfy them. In this context, it is absolutely essential to study the effectiveness of the CRM being practiced by the mobile service providers. This study specifically analyses the extent to which CRM is being practiced by the mobile service providers, and identifies the effect of the service quality of the mobile service providers on the Customer Loyalty. As CRM focuses on being customer centric, it becomes essential to measure the effectiveness of CRM in terms of the degree to which the customers are advocates of the mobile service provider as well as to measure the degree to which they participate in the cross selling and up selling of the various products and services of the provider. To evaluate the effectiveness, there are lots of quantitative techniques available and some work in this area has already been done. But there is a dearth of literature focusing on the relative efficiency. One advanced operations research technique which evaluates the relative efficiency is the Frontier Analysis or Data Envelopment Analysis (DEA).

This paper attempts to use Data Envelopment Analysis to assess the effectiveness of Mobile Service Providers, specifically a set of the providers offering services in Chennai, Tamil Nadu, India. The research has identified a set of input and output parameters for each Service Provider, from which the efficient frontiers (DMUs) are determined. The relative efficiency of the Service Providers are measured with respect to the efficient frontier and then analyzed. Detailed recommendations are set forth, for appropriate interventions to address the specific gaps identified through the gaps analysis. The analysis further provides useful information and opens up new avenues for future research.

Keywords: Data Envelopment Analysis, Effectiveness, CRM, Loyalty, Relative Efficiency, Frontier Analysis, DMU
1. INTRODUCTION
The telecom industry in India has witnessed a transformation from a monolithic regime, through an age of de-regulation and privatization; it has seen the rapid rise of market players who offer innovative products and services. This change has been commensurate with the growth of the industry, now ranked the fifth largest in the world and soon expected to be second largest. Faced with a growing market and increasing competition, companies in the telecom business are adopting to new technological imperatives in order to outperform their competitors. These companies adapt continuously to the dynamic environment so as to survive competition. The emphasis here lies in identifying critical value adding processes and redesigning them to become customer centric. IT is being adopted to redefine the customer service parameters and for retaining customers. The ultimate objective of technology consists in its applicability in targeting to right customers and catering efficiently to their needs. One such practice which is being followed by the telecom companies is the Customer Relationship Management (CRM) to help them compete in the ever changing environment.

CRM signifies identifying the needs of the customers and stretching out ways and means to satisfy them. In this perspective CRM cannot be treated merely as a technology; it also has implications in the strategy formulation for companies. It focuses on the customers looking for value in all their transactions and is willing to pay for that value. In a way technology has brought the customers closer to the marketer. Knowledge about markets, segments and product usage can be made easily available to the organizations. Many companies thrive on this knowledge as it enables them to design the right kind of marketing and promotional strategies to capture the attention of the customers. Even capturing the attention of the customer has become challenging as media proliferation has led to increase in competition. A better equipped customer with knowledge about various alternatives available in the market is difficult to be convinced. Companies have to be alert in their approach to understand the customer’s definition of ‘value’ and accordingly position themselves on quality, service, performance, and efficiency perspective. It becomes imperative to create value for their customers; a value that is able to bind them to the company and stop them from switching to another company’s product. Advertising and promotions can be instrumental in influencing the purchase decision concerning the product launched in the market; but if the company has built a long-term relationship with its customers, advertising and promotion can become more effective in delivering returns. Reducing costs, aggressive promotion and advertising necessarily did not bring revenues and loyal customers. The whole idea is to develop business models that would enhance the quality and improve interaction with their customers leading to more satisfied and loyal customers.

In the light of this context, this paper attempts to study the CRM practices that are being followed extensively by Mobile Service Providers and to assess the effectiveness of CRM on Customer Loyalty using Data Envelopment Analysis (DEA). Though the telecom service providers use CRM comprehensively, the key performance indicator of CRM practices on their services per se is the service quality. Service quality is considered to be an important means of differentiation and path to achieve business success. Since CRM focuses on being customer centric, this study identifies and uses one main outcome of customer orientation, viz., Customer Loyalty, measured in the form of indices. In this paper, customer loyalty is identified in two indices namely, Advocacy Loyalty Index and Purchase Loyalty Index. The paper uses the mathematical technique called Data Envelopment Analysis (DEA) to assess the effectiveness of the CRM practices by Mobile Service Providers, specifically a set of GSM mobile service providers in Chennai, India. The extended SERVQUAL parameters defined by Seth et al are identified to be the input parameters for DEA and using regression we analyze which of these parameters are predictors of the Customer Loyalty which form the output parameters for DEA. From the identified input parameters of SERVQUAL and output parameters of Loyalty, efficient frontiers (DMUs) are determined. The relative effectiveness of the usage of CRM practices by the service providers are measured with respect to the efficient frontier and then analyzed. Detailed recommendations are set forth, for appropriate interventions to address the specific gaps identified through the gaps analysis. The analysis further provides useful information and opens up new avenues for future research.
2. LITERATURE REVIEW
The Indian Telecom Industry with an overall teledensity of 72.09 in April 2011 and the mobile segment teledensity of 69.19, finds it difficult to build sustainable and successful relationships with a large customer base. It is not easy to accomplish and has a direct impact on many core operational processes. It is about the interactions of the entire business with customers. Customer Relationship Management (CRM) is about creating a competitive advantage by being the best at understanding, communicating, delivering service and developing existing customer relationships in addition to creating and keeping new customers.

A good CRM strategy will take the business vision and apply it to the customer base by asking the following questions:
· What products and services are we offering now and will in the future?
· In what markets?
· What customer groups will these products and services appeal to?
· Which of these are of most value to the organization?
· What additional needs do the most valuable customer groups have?
· In what different ways can we be managing our business to deliver better to customers?

Customer Relationship Management (CRM) is rapidly becoming an integral part of many organizations. The concept itself is relatively simple. Rather than market to a mass of people or firms, market to each customer individually. In this one-to-one approach, information about a customer (e.g., previous purchases, needs, and wants) is used to frame offers that are more likely to be accepted. This approach is made possible by advances in information technology.

CRM thus requires organizational and business level approaches – which are customer centric – to doing business rather than a simple marketing strategy. CRM involves all of the corporate functions (marketing, manufacturing, customer services, field sales, and field service) required to contact customers directly or indirectly. The term “touch points” is used in CRM to refer to the many ways in which customers and firms interact.

Most notable among these are the beliefs that existing customers are more profitable because the acquiring and attracting of new customers is expensive, and that it is less costly to up-sell or cross-sell products or services to current customers (Berry, 1995; Peppard, 2000; Sheth and Paravatiyar, 1995). One of the most important studies conducted in this field is by Reichheld and Sasser (1990), which showed the large impact on profitability of small increases in customer retention rates, which made the marketing community more conscious of the need to manage customer relationships in the long term as well as prior to the first sale. In addition, more studies have shown that the cost of retaining current customers is lower than the cost of acquiring new ones (Blattberg and Deighton 1996, Filatrustal and Lapierre 1997) and that economic benefits of high loyalty are important, and in many industries it is this which determines the differences between companies (Reichheld 1996).

The objective of customer relationship management is to unite and join information technology and business processes in a fashion that enables the firm to acquire new customers, to retain existing customers, and maximize the lifetime value of its customers (Peppard, 2000). Most importantly, CRM allows firms to differentiate customer treatments based on specific customer needs and preferences. Additionally, financial metrics that are centered on customers allow firms to segregate those customers that the firm should be keeping from those it should be willing to lose (Dyche, 2001), enabling micro-management of profitability.

An analysis of the above different definitions shows, they all have common concepts of: customer focus (customer satisfaction, loyalty and retention), technology, knowledge management, change management and leadership. According to Newell (2000) there are often three distinct types of relationship customers: the top, middle and lower groups. The top group (top 10 %) consists of customers with excellent loyalty and high profitability for the organization. CRM is needed to retain and offer them the best possible services in order to avoid them defecting to hungry
competitors. Middle group customers (next 40% to 50%) are ones delivering good profits and who show good potential for future growth and loyalty. These are the customers who are probably giving some of their business to competitors. The idea is to use CRM to target middle group customers effectively as they are the greatest source of potential growth. Lower group relational (bottom 40 to 50%) customers are those who are only marginally profitable. Some may have potential for growth but the expense and effort involved in targeting such numbers, hinders the effectiveness of servicing existing relational customers in the top and middle groups.

Some of these benefits can be measured and others cannot. CRM is composed of four continuous processes, and each process provides distinctive benefits to the organization. To obtain all of these benefits, sales, marketing, and service functions need to work together.

**Benefits of CRM project**

**Identification**
- Source of benefits - Clean data about customer, Single Customer View
- Benefits - Help sales force, Cross selling

**Differentiation**
- Source of benefits - Understand customer
- Benefits - Cost effective marketing campaign, Reduce direct mailing cost

**Interaction**
- Source of benefits -Customer satisfaction and loyalty
- Benefits - Cost effective customer service

**Customization**
- Source of benefits -Customer satisfaction and loyalty
- Benefits - Lower cost of acquisition and retention of customer, Maximize share of wallet

In India, rapid diffusion of telecom, at least in the urban areas, has been progressing, thanks to the hyper-competitive telecom markets with the post-liberalization entry of several Indian and global players. In such a competitive milieu, survival and success of the Indian players will depend on competitiveness. For service providers, the pursuit of service quality is essential for competitiveness and is gaining momentum. As a result, service quality has become an important means of differentiation and is critical for achieving corporate success. The proven positive relationship of service quality with customer satisfaction (Danaher and Mattsson, 1994; Leisen and Vance, 2001), customer loyalty and retention (Ranaweera and Neely, 2003), profitability (Thompson, DeSouza and Gale, 1985; Bloemer, Ruyter and Wetzels, 1999) and competitive advantage (Hampton, 1993) provides a base to explore the subject in the mobile context.

Previous studies in this area primarily focused on functional quality aspects (i.e., pertaining to service delivery process or how the services are delivered) and inadequately addressed technical quality aspects (i.e., issues concerning what is actually delivered). However, researchers in mobile communication (Wang and Lo, 2002; Johnson and Sirikit, 2002) have emphasized that technical quality attributes play an important role in forming service quality perceptions of customers. In light of this, this extended SERQUAL (Seth et al, 2008) instrument determines service quality structure by combining both functional as well as technical quality (i.e., network quality in cellular mobile context) attributes.

Service business success has been associated with the ability to deliver superior service (Gale, 1990; Rudie & Wansley, 1984). Delivering superior service by maintaining high quality is a prerequisite for success (Parasuraman et al., 1988). Leading service organizations strive to maintain a superior quality of service in an effort to gain customer loyalty (Zeithaml & Bitner, 1996); thus, a service organization’s long-term success in a market is essentially determined by its ability to expand and maintain a large and loyal customer base. Moreover, the yardstick by which an exceptional service organization may be measured is its retaining customer ratio: the
loyal customer base. Evaluating the impact of service quality through customer retention will help companies to gauge financial impact of service quality (Zeithaml et al., 1996).

While service organizations aim to gain customers' loyalty, customers, on the other hand, seek an organization's service loyalty (the assurance of a consistent and superior quality of service) as proof of the organization's commitment to offering superior service, for both the present and the long term. Berry (1987) proposed the idea of earning loyalty by being loyal.

Numerous studies have been conducted in an attempt to determine the essential nature and development of loyalty, i.e. how organizations can create and enhance customer loyalty through products and services. Recognizing its importance, previous researchers examined the many facets of loyalty: brand loyalty (Bloom, 1981; Carman, 1970; Cooper & Inoue, 1996; Cunningham, 1967; Day, 1969; Frank, 1967; Jacoby, 1971; Olson & Jacoby, 1971; Zeithaml, 1981); store loyalty (Langrehr & Rinne, 1987; Samli & Sirgy, 1981); customer loyalty (Fredericks & Salter, 1995; Lowenstein, 1993; Maruca & Halliday, 1993; O'Brien & Jones, 1995; Ostrowski et al., 1993; Reichheld, 1993); repeat business (Collis, 1990; Crawford, 1993; Lynch, 1995; Sellers, 1989; Wiersema & Thompson, 1991).

Research addressing loyalty within the context of the service industry has traditionally focused on the means by which loyalty may be acquired. Snyder (1986) studied how customers' loyalty to a service organization may be measured accurately. Czepiel and Gilmore (1987) proposed a model showing the development of customer loyalty in services. Gremler and Brown (1996) argued that the loyalty of the service customer is a multi-dimensional construct, comprising three dimensions: behavioural loyalty, attitudinal loyalty and cognitive loyalty.

The challenge for today's organizations is not merely to reach the top, but to stay there. If that is an organization's aim, its primary focus should be not merely to attract customers, but to obtain their loyalty and, thus, their patronage, not only for the present, but also for the long term. This loyalty, however, is the end result of an on-going, long-term relationship. Such relationships are founded on an organization's ability to maintain and extend its relationships with customers (Gummesson, 1994).

(Bob E. Hayes, 2007) identifies key drivers of loyalty for service providers and introduces new customer loyalty metrics designed to help companies increase revenue through new and existing customers:

1. Advocacy Loyalty Index (ALI): Will your customers recommend your products and services to their friends?
2. Purchasing Loyalty Index (PLI): Will your customers purchase different products and/or increase the amount they purchase from you?

These two are the indices which go in with the CRM practices, as CRM practice should result in the customers being satisfied and loyal which can be measured with the extent to which they are advocates of the service provider and they also participate in the up-selling and cross-selling with respect to their purchase intention.

DEA is a mathematical programming technique with a number of practical applications for measuring the performance of a set of similar units. In principle, DEA is concerned with a number of alternative decision making units (DMU). Each of them is analyzed separately via a mathematical programming model which checks whether the DMU under consideration could improve its performance by decreasing its input and increasing its output. The improvement is pursued until the boundary of the convex hull of the other DMUs is reached. A DMU which cannot improve its performance is efficient or non-dominated. Otherwise, it is dominated by a convex combination of other DMUs. Thus, possible improvements for a particular DMU are indicated, not in an arbitrary direction, but on the basis of the performance of the more successful and efficient DMUs.
Identification of inputs and outputs in a service sector is really a challenging task as they are not well defined. In this context, Mahapatra and Khan (2007) have suggested a methodology to find out the factors responsible for quality improvement in education sector via neural network approach. Elangovan et al. (2007) have used an Executive Support System (ESS) approach for improving the quality and productivity in maintenance engineering model. However, DEA approach enables the management to frame right kind of policy for improvement of quality through identification of inefficiencies in certain dimensions in an organisation, both in manufacturing and service industries (Anatiliy, 2007; Parkan, 2006). Pacheco and Fernandes (2003) analysed efficiency of 35 Brazilian domestic airports using DEA and suggested the best quality implementation strategy. Lin et al. (2005) determined the efficiency for a shipping industry using financial indicators through DEA so that Quality Improvement Programme (QIP) can be implemented. Recent studies reveal that DEA has been successfully applied to education sector but each study differs in its scope, meaning and definition.

In one such study, the policy for Italian universities has been derived based on computation of Technical Efficiency (TE) using DEA with various input and output specifications (Agasisti and Bianco, 2006). A comparative study on efficiency of private universities and public universities in the USA using DEA has been carried out by Rhodes and Southwick (1986) considering each individual university as a DMU. Tomkins and Green (1988) have used DEA to test the performance of individual departments of a university considering both teaching and research activities and compared the results with the ranking obtained by means of elemental analysis of staff/student ratio. McMillen (1997) applied DEA in order to assess the relative desirability of Association to Advance Collegiate Schools of Business (AACSB) accredited MBA programmes. McMillan and Datta (1998) used DEA to assess the relative efficiency of 45 Canadian universities and found that a subset of universities comprising of three categories such as comprehensive with medical school, comprehensive without medical school and primarily undergraduate universities are regularly found to be efficient. In an attempt to compare the performance of selected schools in the Netherlands, Ramanathan (2001) studied the effect of several non-discretionary input variables which are not under direct control of management on efficiency scores. Calhoun (2003) employed DEA to compare relative efficiencies of private and public Institutions of Higher Learning (IHL) using a sample of 1323 four-year old institutions and introduced a new way for clustering institutions based on revenue management.

Data envelopment analysis (DEA), occasionally called frontier analysis, was first put forward by Charnes, Cooper and Rhodes in 1978. It is a performance measurement technique which, can be used for evaluating the relative efficiency of decision-making units (DMU's) in organisations. Examples of such units to which DEA has been applied are: banks, police stations, hospitals, tax offices, prisons, defence bases (army, navy, air force), schools and university departments. One advantage of DEA is that it can be applied to non-profit making organizations. Since the technique was first proposed much theoretical and empirical work has been done. Many studies have been published dealing with applying DEA in real-world situations. Obviously there are many more unpublished studies, e.g. done internally by companies or by external consultants. Though DEA is being used by many Service Organizations, there is no such study using DEA to assess the effectiveness of a leading-edge technology like CRM being used by the telecom operators on the Customer Loyalty.

3. RESEARCH METHODOLOGY

The questionnaires including covering letter, were personally distributed to customers of mobile services, during Apr-Jun, 2011. Convenience sampling method was used to collect the data from customers. Further, the data was specifically collected from residential mobile customers, who had been using the services for at least six months. Finally, of the 550 surveys individually administered, 523 questionnaires were received at a response rate of 95 per cent. On further filtering, 490 responses were found to be completely filled which results in the response rate of 89%. The high rate of responsiveness is the result of the constant follow ups and reminders sent to the respondents considering the higher level of subscribers in the mobile segment. The demographic characteristics of the customers are summarized in Table 1. Most of the
respondents (about 60%) were pre-paid, while rest (40%) of the respondents accounted for post-paid services. Respondents in the age group 21-30 yrs (32%), 31-40 yrs (26%) and 41-50 yrs (21%) were the major contributors.

<table>
<thead>
<tr>
<th>Age</th>
<th>No.</th>
<th>Name</th>
<th>Frequency</th>
<th>%</th>
</tr>
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<tbody>
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<td>18-20</td>
<td>51</td>
<td>10.4</td>
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<tr>
<td>2</td>
<td>21-30</td>
<td>157</td>
<td>32</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>41-50</td>
<td>103</td>
<td>21</td>
<td></td>
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<tr>
<td>5</td>
<td>&gt;50</td>
<td>49</td>
<td>10</td>
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</table>

<table>
<thead>
<tr>
<th>Monthly Expenditure</th>
<th>No.</th>
<th>Name</th>
<th>Frequency</th>
<th>%</th>
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</thead>
<tbody>
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<td>1</td>
<td>upto 500</td>
<td>314</td>
<td>64.1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>501-1000</td>
<td>124</td>
<td>25.3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1001-2000</td>
<td>34</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>&gt;2000</td>
<td>18</td>
<td>3.7</td>
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<table>
<thead>
<tr>
<th>Education</th>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
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<td>Grad</td>
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</tr>
<tr>
<td>2</td>
<td>UG</td>
<td>131</td>
<td>26.7</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PG</td>
<td>189</td>
<td>38.6</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Others</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>Occupation</th>
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<th>Name</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>Business</td>
<td>64</td>
<td>13.1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Professionals</td>
<td>129</td>
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</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>Home Maker</td>
<td>62</td>
<td>12.7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Student</td>
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<td>32.9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Others</td>
<td>46</td>
<td>9.4</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: Demographic Characteristics of Respondents**

**4. ANALYSIS AND RESULTS**

Data collected was analysed through a series of validated tools and procedures. The reliability of items was assessed by computing the coefficient alpha (Cronbach, 1951), that measures the internal consistency of the items. For a measure to be acceptable, coefficient alpha should be above 0.7 (Nunnally, 1978). Owing to multidimensionality of service quality construct, coefficient alpha was computed separately for all the dimensions identified. In the present study, all alpha coefficients ranged from 0.687 (close to the cut-off value of 0.70) to 0.9 indicating good consistency among the items within each dimension. The results are shown in Table 2.
SERVQUAL Parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>No.of Items</th>
<th>Apha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reliability</td>
<td>5</td>
<td>0.846</td>
</tr>
<tr>
<td>2</td>
<td>Responsiveness</td>
<td>4</td>
<td>0.863</td>
</tr>
<tr>
<td>3</td>
<td>Assurance</td>
<td>4</td>
<td>0.802</td>
</tr>
<tr>
<td>4</td>
<td>Empathy</td>
<td>5</td>
<td>0.816</td>
</tr>
<tr>
<td>5</td>
<td>Tangibles</td>
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<td>0.775</td>
</tr>
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<td>6</td>
<td>Convenience</td>
<td>4</td>
<td>0.778</td>
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<tr>
<td>7</td>
<td>CupenQlty</td>
<td>5</td>
<td>0.781</td>
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</tbody>
</table>

Loyalty Parameters

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>No.of Items</th>
<th>Apha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Advocacy</td>
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</tr>
<tr>
<td>2</td>
<td>Purchase</td>
<td>3</td>
<td>0.687</td>
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</tbody>
</table>

TABLE 2: Reliability Scores (Cronbach’s Alpha)

Factor Analysis

Before proceeding for the factor analysis, appropriateness of factor analysis needs to be assessed. This can be done by examining sampling adequacy through Kaiser- Meyer-Olkin (KMO) statistic. Table 3 provides the SPSS output of data for factor analysis. KMO value greater than 0.6 can be considered as adequate. (Kaiser and Rice, 1974).

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</th>
<th>.876</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett’s Test of Approx. Chi-Square Sphericity</td>
<td>7404.626</td>
</tr>
</tbody>
</table>

TABLE 3: KMO and Bartlett’s Test

From the Table, it can be seen that KMO value is acceptable; Bratlett test results also show that the values are significant and thus acceptable. The items in the respective category were individually subjected to PCA with varimax rotation and Kaiser Normalization.

The items having factor loadings less than 0.5 were eliminated (Hair et al., 2005). Finally, seven factors comprising twenty-eight items, all having eigen values of unity and above were extracted and the results are shown in Table 4. Further, in order to assess the appropriateness of the data for factor analysis, the communalities derived from the factor analysis were reviewed. These were all relatively large (greater than 0.5), suggesting that the data set is appropriate (Stewart, 1981). The individual dimensions of the proposed instrument explained total variance exceeding 60 per cent, suggesting the appropriateness of the process.
<table>
<thead>
<tr>
<th>Component</th>
<th>Reliability</th>
<th>Responsiveness</th>
<th>N/w Qly</th>
<th>Assurance</th>
<th>Conveniences</th>
<th>Empathy</th>
<th>Tangibles</th>
</tr>
</thead>
<tbody>
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<td>Rel4</td>
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<td>Rel5</td>
<td>.758</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Rel2</td>
<td>.677</td>
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<tr>
<td>cupeneqty2</td>
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<td></td>
<td>.614</td>
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<td>Assu4</td>
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<td>.718</td>
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<td>Assu3</td>
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<td>.679</td>
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<td></td>
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<td>.779</td>
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<tr>
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<td></td>
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<td>.587</td>
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<td>.657</td>
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<td>Emp4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.557</td>
<td></td>
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<tr>
<td>Emp1</td>
<td></td>
<td></td>
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<td>.544</td>
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<td>Emp3</td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 7 iterations.

**TABLE 4:** Factor Extraction Results of Service Quality Measurement Items

According to Ahire, Goljar and Waller, (1996), confirmatory factor analysis (CFA) provides enhanced control for assessing unidimensionality (i.e., the extent to which items on a factor measure one single construct) than exploratory factor analysis (EFA) and is more in line with the overall process of construct validation. In this study, confirmatory factor analysis model is run through SPSS Amos 19 and the key model statistics are shown in Table 5.
FACTORS | COMPARATIVE FIT INDEX (CFI) | GOODNESS OF FIT INDEX (GFI)
--- | --- | ---
Reliability | .971 | .972
Responsiveness | .991 | .99
Assurance | .973 | .982
Empathy | .935 | .951
Tangibles | .925 | .931
Convenience | .966 | .981
Customer Perceived N/w Quality | .956 | .973

TABLE 5: Unidimensionality for the Seven Dimensions

The same process of Factor Analysis is repeated for the Loyalty Indices. The results are found from Table 6 through 8.

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | .820 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1517.395 |
| | Df | 15 |
| | Sig. | .000 |

TABLE 6: Loyalty Indices - KMO and Bartlett's Test

<table>
<thead>
<tr>
<th>Component</th>
<th>Advocacy</th>
<th>Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyaltyindex2</td>
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</tr>
<tr>
<td>Loyaltyindex6</td>
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</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

TABLE 7: Factor Extraction Results of Loyalty Indices Measurement Items

| FACTORS | COMPARATIVE FIT INDEX (CFI) | GOODNESS OF FIT INDEX (GFI)
--- | --- | ---
Advocacy Loyalty Index | .995 | .991 |
Purchase Loyalty index | .971 | .977 |

TABLE 8: Unidimensionality for the Two Loyalty Indices
To analyse the effectiveness of CRM on Loyalty, the first step is to perform a Multiple Regression Analysis of Service Quality Parameters Advocacy Loyalty Index and Purchase Loyalty Index as the dependent variables. From the Regression analysis we determine the predictors of Advocacy and Purchase Loyalty.

The results of the Regression Analysis are given below in equations:

**Advocacy Loyalty Index (ALI)**

\[ ALI = 3.568 + 0.256 \text{Reliability} + 0.327 \text{Responsiveness} + 0.279 \text{Customer Perceived Network Quality} + 0.19 \text{Assurance} + 0.241 \text{Empathy} \]

**Purchase Loyalty Index (PLI)**

\[ PLI = 3.261 + 0.150 \text{Reliability} + (-0.124) \text{Customer Perceived Network Quality} + 0.122 \text{Assurance} + 0.212 \text{Convenience} + 0.103 \text{Empathy} \]

### 5. ASSESSING THE EFFECTIVENESS OF CRM USING DATA ENVELOPMENT ANALYSIS

The predictors from the regression analysis are used as input parameters and the two loyalty indices are used as output parameters for the study. The mean values of the service quality parameters are taken as input for each of the Service Providers. Data pertaining to 7 Service providers are used for the study.

<table>
<thead>
<tr>
<th>Mobile Service Provider</th>
<th>Reliability</th>
<th>Responsiveness</th>
<th>Empathy</th>
<th>Assurance</th>
<th>Network Qty</th>
<th>Advocacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1</td>
<td>3.48</td>
<td>.41</td>
<td>3.19</td>
<td>3.56</td>
<td>3.52</td>
<td>3.44</td>
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<tr>
<td>SP2</td>
<td>3.65</td>
<td>3.49</td>
<td>3.29</td>
<td>3.14</td>
<td>3.56</td>
<td>3.67</td>
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<td>SP3</td>
<td>3.53</td>
<td>3.35</td>
<td>3.19</td>
<td>3.54</td>
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<td>SP4</td>
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<td>3.66</td>
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<td>SP7</td>
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<td>3.64</td>
<td>3.53</td>
<td>3.73</td>
<td>3.48</td>
<td>3.45</td>
</tr>
</tbody>
</table>

**TABLE 9: Mobile Service Providers Details with Input and Output Parameters – Advocacy**

For example, for the Service Provider SP3, the Reliability averages to 3.53, Responsiveness averages to 3.35, Empathy averages to 3.19, Assurance averages to 3.54, Customer Perceived Network Quality averages to 3.53 and the output parameter Advocacy averages to 3.51.

To compare these service providers and measure their performance a commonly used method is ratios which takes output measure and divides it by the corresponding input measure. In this case, we analyze the effectiveness of providers by taking inputs and converting them (with varying degrees of efficiency) into outputs. Since we have only one output parameter namely, Advocacy and 5 input parameters it is not advisable to perform such ratio as it would give a skewed result.

One problem with comparison using ratios is that different ratios can give a different picture and it is difficult to combine the entire set of ratios into a single numeric judgment. To combine these figures into a single judgment is very difficult. This problem of different ratios giving different pictures would be especially true if there is an increase in the number of service providers (and/or increase the number of input/output measures). Thus it is very difficult to interpret the values corresponding to service provider S5 from these ratios. This is where it is essential to get into a better technique called Data Envelopment Analysis which interprets the ratios and provides the efficient frontier.
It is important to note that DEA can only give relative efficiencies - efficiencies relative to the data considered. It does not, and cannot give absolute efficiencies. In words, DEA while evaluating any number of Decision making units (DMU's), and with any number of inputs and outputs requires the inputs and outputs for each DMU to be specified. It defines efficiency for each DMU as a weighted sum of outputs [total output] divided by a weighted sum of inputs [total input]; where all efficiencies are restricted to lie between zero and one (i.e. between 0% and 100%). It uses the numerical value for calculating the efficiency of a particular DMU. Weights are chosen to maximise its efficiency, thereby presenting the DMU in the best possible light.

Thus DEA provides the details of the best performing DMU which is usually 100% efficient. The other DMUs are not performing up to this efficient frontier. The Table 10 gives the DEA Solver Output for the Effect on Advocacy.

<table>
<thead>
<tr>
<th>Mobile Service Provider</th>
<th>Reliability</th>
<th>Responsiveness</th>
<th>Empathy</th>
<th>Assurance</th>
<th>Network Qty</th>
<th>Advocacy</th>
<th>Weighted Op</th>
<th>Weighted Up</th>
<th>Efficiency</th>
<th>Working</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1</td>
<td>3.48</td>
<td>3.41</td>
<td>3.19</td>
<td>3.56</td>
<td>3.52</td>
<td>3.44</td>
<td>0.96</td>
<td>1.00</td>
<td>0.96</td>
<td>-0.04</td>
</tr>
<tr>
<td>SP2</td>
<td>3.65</td>
<td>3.49</td>
<td>3.29</td>
<td>3.14</td>
<td>3.56</td>
<td>3.67</td>
<td>1.03</td>
<td>1.03</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>SP3</td>
<td>3.53</td>
<td>3.35</td>
<td>3.19</td>
<td>3.54</td>
<td>3.53</td>
<td>3.51</td>
<td>0.99</td>
<td>0.99</td>
<td>0.99</td>
<td>-0.01</td>
</tr>
<tr>
<td>SP4</td>
<td>3.47</td>
<td>3.47</td>
<td>3.34</td>
<td>3.75</td>
<td>3.49</td>
<td>3.55</td>
<td>0.99</td>
<td>1.03</td>
<td>0.97</td>
<td>-0.03</td>
</tr>
<tr>
<td>SP5</td>
<td>3.59</td>
<td>3.64</td>
<td>3.45</td>
<td>3.84</td>
<td>3.49</td>
<td>3.57</td>
<td>1.00</td>
<td>1.07</td>
<td>0.93</td>
<td>-0.07</td>
</tr>
<tr>
<td>SP6</td>
<td>3.55</td>
<td>3.58</td>
<td>3.25</td>
<td>3.66</td>
<td>3.65</td>
<td>3.72</td>
<td>1.04</td>
<td>1.04</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>SP7</td>
<td>3.63</td>
<td>3.64</td>
<td>3.53</td>
<td>3.73</td>
<td>3.48</td>
<td>3.45</td>
<td>0.96</td>
<td>1.08</td>
<td>0.89</td>
<td>-0.12</td>
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<tr>
<td>Weight</td>
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<td>0.19979</td>
<td>0.08966</td>
<td>0.00000</td>
<td>0.00000</td>
<td>0.279557</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**TABLE 10:** Effectiveness of the Service providers on Advocacy Loyalty using DEA

From the analysis using DEA, it can be seen that SP2 and SP6 are the two mobile service providers who are on the efficient frontier as the efficiency is 1.00. The other service providers SP1, SP3, SP4 and SP7 are less performing. For instance, SP7 is only 89% efficient when compared to SP2 and SP6. That means, given the current scenario, SP7 needs to improve by 11% to reach the efficient provider.

**MANAGERIAL IMPLICATIONS ON ADVOCACY AND PURCHASE LOYALTY**

The Service Providers SP2 and SP6 are 100% efficient. For the other service providers to improve their performance they need to analyse the input and output parameters of the efficient frontiers. Thus, for instance let us consider the Service Provider SP5. Their current levels of efficiency with respect to the service quality parameters as inputs are only 93%. They need to improve by 7% to reach the efficient frontier. For improving their performance, the service provider SP5 needs to look into how their service quality parameters influence the advocacy loyalty index. They also could analyze the predictors of Advocacy loyalty of the efficient frontier, i.e., SP2 or SP6.

For instance from the data set, the regression equation for SP5 is as given below:

**Advocacy Loyalty Index (ALI) = 0.395 + 0.615 Customer Perceived Network Quality**

To compare, let us consider the regression equation of SP2 and SP6.

For SP2,
Advocacy Loyalty Index (ALI) = 1.402 + 0.255 Responsiveness + 0.224 Assurance + 0.258 Empathy + (-0.344) Tangibles + 0.259 Customer Perceived Network Quality

For SP6,
Advocacy Loyalty Index (ALI) = 0.970 + 0.334 Reliability + 0.260 Assurance + (-0.259) Tangibles.

From the above regression equations, SP7 could consider either the predictors of SP2 or SP6 in order to improve its efficiency.

Similarly, the same procedure is repeated for Purchase loyalty. The regression equation for the same is as given below:

<table>
<thead>
<tr>
<th>Mobile Service Provider</th>
<th>Reliability</th>
<th>Assurance</th>
<th>Convenience</th>
<th>Network Qlty</th>
<th>Empathy</th>
<th>Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1</td>
<td>3.48</td>
<td>3.56</td>
<td>3.35</td>
<td>3.52</td>
<td>3.19</td>
<td>3.3</td>
</tr>
<tr>
<td>SP2</td>
<td>3.65</td>
<td>3.14</td>
<td>3.47</td>
<td>3.56</td>
<td>3.29</td>
<td>3.29</td>
</tr>
<tr>
<td>SP3</td>
<td>3.53</td>
<td>3.54</td>
<td>3.4</td>
<td>3.53</td>
<td>3.19</td>
<td>3.21</td>
</tr>
<tr>
<td>SP4</td>
<td>3.47</td>
<td>3.75</td>
<td>3.51</td>
<td>3.49</td>
<td>3.34</td>
<td>3.27</td>
</tr>
<tr>
<td>SP5</td>
<td>3.59</td>
<td>3.84</td>
<td>3.49</td>
<td>3.49</td>
<td>3.45</td>
<td>3.24</td>
</tr>
<tr>
<td>SP6</td>
<td>3.55</td>
<td>3.66</td>
<td>3.45</td>
<td>3.65</td>
<td>3.25</td>
<td>3.22</td>
</tr>
<tr>
<td>SP7</td>
<td>3.63</td>
<td>3.73</td>
<td>3.51</td>
<td>3.48</td>
<td>3.53</td>
<td>3.26</td>
</tr>
</tbody>
</table>

TABLE 11: Mobile Service Providers Details with Input and Output Parameters – Purchase

The Solver Screenshot to determine the effectiveness of CRM on Purchase Loyalty Index is given below:

The analysis for purchase loyalty using DEA, it can be seen that SP1, SP3,SP5 and SP6 are the mobile service providers who are on the efficient frontier as the efficiency is 1.00. The other service providers SP2, SP4 and SP7 are less performing. Thus the same insight could be extended to the purchase loyalty index too.

As compared to the previous research work using Data Envelopment Analysis, this paper is an attempt to contribute its findings to the most competitive industry, i.e the telecom industry. The application of DEA is used only in the last stage to evaluate the effectiveness of CRM adopted by
the telecom industry in India. This study attempts to links many facets of business viz., CRM approach which is adopted by the telecom industry; comparison of its effectiveness using a Quantitative approach like Data Envelopment Analysis. The output of this simulated model provides an insight to the industry practitioners an effective method of evaluating a technology which is being adopted by them. Though this study concentrates only on 7 service providers in Chennai, it can further be extended with more parameters so that a holistic picture on the actual happenings and the scope of improvement of each players in different areas can be further improved.

6. CONCLUSION
This paper set out as a contribution to current practices of CRM by the mobile service providers for assessing the effectiveness on Customer Loyalty. Data pertaining to 7 Service Providers were collected from a sample of 490 mobile users in Chennai, Tamil Nadu, and India to analyze the effectiveness of CRM practices using Data Envelopment Analysis (DEA)/Frontier analysis. The efficient frontiers were identified and the relative efficiency of the other service providers were established using DEA which formulates the situation as a Linear Programming Problem and was solved using Excel Solver. This research was an attempt to analyze the effectiveness of an IT i.e. CRM technology, being extensively used for a specific purpose of moving closer to the customer. The study analyzed the effectiveness of CRM on two Loyalty Indices which relate to the concept of Word of Mouth, Cross-selling and Up-selling. As this research is confined only to two models, namely a model for Advocacy Loyalty and Purchase Loyalty, it cannot be generalized unless it is extended to more concepts on Loyalty. This study provides scope for further research using multiple input and output measures to assess the effectiveness of various IT tools in other service sector and other industrial sectors.

7. REFERENCES


Predicting e-Customer Behavior in B2C Relationships for CLV Model

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Abstract

E-Commerce sales have demonstrated an amazing growth in the last few years. And it is thus clear that the web is becoming an increasingly important channel and companies should strive for a successful web site. In this completion knowing e-customer and predicting his behavior is very important. In this paper we describe e-customer behavior in B2C relationships and then according to this behavior a new model for evaluating e-customer in B2C e-commerce relationships will be described. The most important thing in our e-CLV (Electronic Customer Lifetime Value) model is considering market's risks that are affecting customer cash flow in future. A lot of CLV models are based on simple NPV (simple net present value). However simple NPV can assess a good value for CLV, but simple NPV ignores two important aspects of B2C e-relationship which are market risks and big amount of customer data in e-commerce context. Therefore, simple NPV isn't enough for assessing e-CLV in high risk B2C markets. Instead of NPV, real option analyses could lead us to a better estimation for future cash flow of customers. With real option analyses, we predict all the future states with probability of each of them. And then calculate the more accurate of future customer cash flow. In this paper after a brief history of CLV, we explain customer behavior in B2C markets especially for e-retailers. Then with using real option analyses, we introduce our CLV model. Two extended examples explain our model and introduce the steps in finding CLV of customer in a B2C relationship.

Keywords: Customer Lifetime Value (CLV), e-Commerce Relationships, Net Present Value (NPV), customer's behavior.

1. INTRODUCTION

CLV is an important parameter in B2B and B2C relationships. Managers could make better decisions to segment customers by CLV. The majority of contributions that investigate CLVs are based on simple net present value (NPV) considerations. Using simple NPVs to assess CLVs, the supplier discounts future cash flows from a specific customer to the present date, while deducting the investment expenditure associated with the customer. Despite of its broad acceptance, NPV isn't most appropriate approach with which to value customers in e-relationships. The most important reason for this inappropriate is regarding the environmental risks (such as fluctuations in demand, changing customer's needs, technological change, changing prices and production costs). Consequently, simple NPV analyses could assess CLV when the market has no environmental risks, and we can't use NPV-based models in real high-risk markets. In addition to this, e-commerce environments are very data-rich and traditional CLV models are unable to cope with this data-richness[1].

In this paper, at first we introduce the history of CLV models, and their problems in high risk markets. Then, we describe customer's behavior in B2C e-relationships, and define a period of time for customer's buying. Then, we estimate customer cash flows in future, by using history of customer's behavior. After that, real option analyses adapt the estimated future cash flows, to find accurate customer lifetime value in future. In this paper we complete our e-CLV model in three steps. In each step, our model will be improved and calculates more accurate value. And in third step, we introduce an accurate e-CLV model for B2C high risk markets by applying real option
analyses. Then, we compare CLV models in B2C and B2B markets. Finally, we explain future works and limitation of our model to solve in future papers.

2. HISTORY OF CLV MODELS

Since Bursk’s article “View your customers as investments” in 1966, a number of scholars have adopted the idea of using NPV-based analyses to assess the value of customers in relationships[2]. In 1985, Jackson differentiated customers to lost-for-good and always-a-share. She proposed distinct approaches with which to assess industrial customers according to their buying behavior. Lost-for-good customers buying with high switching costs therefore they are reluctant to switch suppliers. Although these customers are committed to only one vendor, always-a-share customers may buy from more than one supplier. Switching costs are lower for the latter group than the lost-for-good customers. It means that the always-a-share customers can apportion their purchases among suppliers while maintaining low costs. Jackson suggested calculating different versions of NPVs to explore the value of the two customer groups [3]. Afterward, Dwyer extended Jackson’s analysis by refining and applying it to a direct marketing context [4].

In 1998, Berger and Nasr proposed a series of mathematical models for calculating CLV in different scenarios[5], whereas much of the earlier literature had been – in their words – ‘dedicated to extolling its use as a decision criterion’[1]. In 2000, these models were subsequently re-formulated and unified by casting them into a Markov chain framework by Pfeifer and Carraway[6]. Unlike cross sectional or basic longitudinal models for predicting CLV, Markov chains can be used to explicitly model the dynamics of how CLV develops over time for a given customer[1].

In 2001 Jacobs, Johnston and Kotchetova used a NPV based model in B2B context for calculating CLV[7]. Customer value also was evaluated in B2C context by Reinartz and Kumar in 2003. To calculate CLV, they used the present values of the customers’ estimated contribution margins[8]. Many recently publication about evaluating customer based in NPV and simple NPV. The difference between present values and net present values is that opposite to the present value, the net present value concept takes investment expenditures into account[9].

Consequently, most of these models calculate CLV by (simple) NPV. And there isn’t any attention to environmental risks in these models. If customers’ cash flows remained largely unaffected by risk, NPVs would be the correct assessment method. Since many markets are currently uncertain, simple NPV methods need to be extended to assess uncertain CLVs correctly. In 2004, Adams demonstrates a new model for CLV by using real options to assess customer equity in the financial services sector. In this model Adams show how the real options approach could be applied to assess an insurance firm’s customers equity[10]. In 2007, Ellen Roemer introduces a new CLV model based on real option analyses. Her model evaluates customers in buyer-seller relationships in B2B context. Her model suggests a typology of CLV models in accordance with the degree of environmental risk and the supplier’s flexibility[11].

In this paper we want to extend real option based models to B2C context. It means that our method uses real option analyses to evaluate customers in B2C high risk markets.

3. CUSTOMER’S BEHAVIOR IN B2C E-COMMERCE RELATIONSHIPS

First of all, for a CLV model in B2C context we need to illustrate customer’s behavior in B2C e-relationships. In this type of relationship, the customer is consumer and buys products or services for consuming then amount of each trade is less than a trade in B2B relationship, and customer’s purchases in B2C relationships often aren’t on a pre-defined contract. But on the other hand, in a retailer company number of customers in B2C relationships is more than B2B relationships. Then for a simplified model, we need to divide customers into different types. Depending on average period of time between two sequential purchases of a customer we propose different customers to different types.
In table 1, different types of customers are shown and period shows the period of time between two sequential purchases of a customer, which we consider for each type. Customers in type 1 are very good and loyal customers and customers in type 5 aren't very important in B2C markets. Now, we consider \( q_t \) as amount of customer's purchase in one period, and don't pay any attention to the length of each period.

As we said before e-commerce context is very data-rich, then we have a lot of e-customer's data and we should find a way to classified them. For this purpose, we calculate mean and standard deviation of a customer's purchase in all previous periods. These two factors give a better view of customer's behavior and are essential in Normal distribution. Let \( q_t \) be amount of customer's purchase in one period, then we have \( q_0 \) for current period and \( q_t, t=-1,-2,-3, \ldots \) for previous periods down to the first period of customer's purchase\(^1\). Equation 1 calculates \( \mu \) mean (average) of customer's purchase and equation 2 calculates \( \sigma^2 \) standard deviation of customer's purchase for \( n \) periods (from now down to the first period).

\[
\mu = E(q_t) = \frac{\sum_{t=-1}^{n} q_t}{n}, \quad 1
\]

\[
\sigma^2 = Var(q_t) = E[(q_t - \mu)^2] = \frac{\sum_{t=-1}^{n} (q_t - \mu)^2}{n}, \quad 2
\]

History of customer's behavior impact on customer cash flows in the future, this is the base of most CLV models \([1][11][12]\). To assess the CLV, the customer's purchase should be estimated for different future states of the world, weighed with probabilities and discounted to the present date. Amount of customer's purchase in period \( t(q_t) \) is uncertain in future periods; we can assume that in future the customer's purchase is related to past periods. In this sense, amount of purchase follows a stochastic process in which the initial volume is known today, but future volume is unknown (stochastic)\([11]\). We have chosen normal distribution for customer's purchase in future as it is easy to use and many scientists like Schmittlein & Peterson and the others have modeled customer behavior by normal distribution\([13][14]\). If future cash flow is modeled as a normal stochastic process, probabilities for different future states can be mathematically derived from the stochastic processes. We use \( \mu \) and \( \sigma^2 \) that calculated in equations 1 and 2 as parameters for normal distribution. Then we can estimated \( q_t, t=1,2,3,\ldots \) for future periods, it shows in equation\(3\). By determining \( \mu \) and \( \sigma^2 \), we could generate normal distribution numbers. Excel, MATLAB, Minitab or other mathematical software can help us to generate normal distribution numbers.

\[
q_t = Norm(t; \mu, \sigma^2), \quad 3
\]

\(^1\)Series of \( q_t \) could be derived from customer's database
In the other side, there is a discount rate which discounts future cash flows or customer's purchase. Determining an appropriate discount rate is usually difficult. Customarily, companies expect rate of return for an equivalent investment in the capital market[11]. For simplicity, we assume that future margins will be discounted at the risk-free interest rate $i$ (like most of other CLV models) [15][16]. To assess the CLV, the supplier considers $n$ future periods. The CLV (step 1) can be calculated as a simple present value formula given in equation 4.

$$CLV_{\text{step 1}} = \sum_{t=1}^{n} \frac{q_t}{(1+i)^t},$$  

But step 1 has a big problem. It shows amount of customer's purchase not supplier's profit, we must subtract supplier's costs to determine accurate CLV. For this purpose, we assume $x$ as a percentage of customer's purchase that is equal to supplier's profit (e.g. 10% or 15%)\(^2\). Equation 5 shows CLV (step 2).

$$CLV_{\text{step 2}} = \sum_{t=1}^{n} \left( \frac{x \cdot q_t}{(1+i)^t} \right)$$  

A simple numerical example could demonstrate the CLV in step 2. Imagine a customer buys every two weeks, and average of his purchase is 40 $, and standard deviation of his purchase in previous periods is 10. We must estimate future amount of customer's purchase ($q_t$, $t=1,2,3,...$). Equation 3 shows that $q_t$ follows normal distribution, then $q_t=\text{Norm}(t; 40, 10)$. For example in four periods $q_1=22.03$, $q_2=49.36$, $q_3=26.13$, $q_4=34.16$ (These numbers are generated by Microsoft Excel2007). In this example we set percentage of seller's profit ($x$)=15% and discount rate ($i$)=10%. Then according to equation 5 the CLV (step 2) is:

$$CLV_{\text{step 2}} = \sum_{t=1}^{4} \left( \frac{0.15 \times q_t}{(1+0.1)^t} \right)$$

$$= \frac{0.15 \times 22.03}{1.1^1} + \frac{0.15 \times 49.36}{1.1^2} + \frac{0.15 \times 26.13}{1.1^3} + \frac{0.15 \times 34.16}{1.1^4}$$

$$CLV_{\text{step 2}} = 3.611 + 2.94 + 3.49 = 15.54$$

These calculations show that the value of this customer is 15.54 $ for next four periods. In this example the length of each period is two weeks. Then four next periods are eight weeks. By this data the seller could decide to pay attention to this customer for a mid-term marketing plan or not. But yet, there is another problem in step 2. This is increasing or decreasing future customer's demand in high risk e-commerce relationships. Real option analyses could considers all the future states[17][18] and solve this problem. In the next step, we use real option analyses to determine another factor ($F_t$) and multiply $F_t$ with amount of customer's purchase in each period $t$, and then we find the accurate amount of customer's purchase in high risk markets.

\(^2\)This percentage depends to market's type or other parameters.

\(^3\)In Microsoft Excel2007 formula NORMINV(RAND();40;10) could generate numbers that follow normal distribution
4. REAL OPTIONS IN FUTURE

In a real high risk market, the future demand can go either up or down. Customer cash flows are affected by environmental risks in many guises. Risk can appear as operational risk due to the nature of a firm’s business activities, country risks, risks from competitors’ actions, technological risk and demand-side risks \cite{19}, in addition to these in e-commerce context switching cost is very low, and customer could switch its vendor by only one click. All types of risk result in fluctuations in demand, price and/or costs and thus have an immediate impact on the customer’s cash flows. Then we focus on demand risk that affects customer cash flows and thus follow other papers recommendation to treat risks separately\cite{11}\cite{17}. Many markets are affected by demand risk, which complicates the projection of future cash flows. Demand for products that require high investments in production can fluctuate with a country’s economic situation. Moreover, firms developing and launching new products are confronted with high demand risk because future demand is difficult to forecast\cite{11}.

To assess the CLV, the demand should be estimated for different future states of the world, weighed with probabilities and discounted to the present date. We can assume the future demand can go up or down. As we said before factor $F_t$ is the key for this purpose. $F_t$ shows the probability of increase or decrease in each period. Then equation 6 shows the CLV model in step 3. In this step each period multiply with $F_t$ and this equation considers increasing or decreasing in future demands in a real high risk market.

$$CLV_{step\ 3} = \sum_{t=1}^{n} \left( \frac{F_t}{(1+i)^t} \right)$$  

For $F_t$ we have chosen a binomial approach for increasing or decreasing future demand as it is easy to use and can span a large range of applications (this corresponds to \cite{11}\cite{18}\cite{19}). If future demand is modeled as a binomial stochastic process, probabilities for different future states can be mathematically derived from the stochastic processes. For binomial stochastic we need three factor $u$ (increasing factor in each period), $d$ (decreasing factor in each period) and $p$ (probability of happening increased state in the next period).

Demand is known today but uncertain in future and follows a multiplicative binomial process in which demand can either improve by factor $u>1$ in future, or decrease by $d<1$. Therefore, $F_t$ at the first period ($t=1$) is either $u$ or $d$. The probability $p$ of an increase in demand in the next period can also be derived from mathematical process. It is clear that if $p$ is probability of increase in next period then $(1-p)$ is probability of decrease in next period. Then at the first period ($t=1$) the customer purchase must be multiplied with $F_1=(p.u+(1-p).d)$ and in the other periods the customer's purchase must be multiplied with $F_t=(p.u+(1-p).d)^t$. This binomial approach is used in many papers that estimated future demands with real option analyses\cite{11}\cite{17}\cite{18}. All of the factors $u, d$ and $p$ can be calculated by historical data from customer’s database. Equations 7, 8, 9, 10 show $F_t$ in four periods ($t=1, 2, 3, 4$).

$$F_1 = p.u + (1-p).d$$

$$F_2 = (p.u + (1-p).d)^2 = p^2.u^2 + 2.p.u.(1-p).d + (1-p)^2.d^2$$


Equation 11 shows our final CLV model (step 3).
As it can be seen in above equation, in this model different future potential demands are calculated (e.g., $u^3q_3$), multiplied with the supplier’s profit $x$, weighed with probabilities $p^3$ and discounted to the present date. If upward and downward factors converged towards each other so that $u=d=1$, demand would remain constant and CLV (step 2) would overcome. Similarly, if $p$ converged towards 1, the future upward state would become certain and step 2 would again overcome.

For better understanding, we extend previous example to step 3. In the previous example we have a customer that buys every two weeks. Mean of his purchase's amount is 40$ and standard deviation of his purchases is 10. We found that if there isn't any market's risk, he approximately gives 15.54 $ profit to the seller, in next four periods. In real e-commerce markets we have many risks, these risks make some fluctuations in customer's demand. As we said before, for these fluctuations we have $u, d$ and $p$ to model customer's purchase by binomial distribution. These factors can be estimated by historical data and other information about market's risks. In this example the seller expects demand to either grow by factor $u=1.4$, or go down by factor $d=0.8$ in future. The probability that demand will increase in the next period is $p=0.5$, and the probability that demand will decrease is $(1-p) =0.5$. Real option analyses according to equations 8, 9, 10 generate an event tree for customer's cash flow in four next periods.

Figure 1 shows this event tree; in each node of this tree we show one state of future period. As we said in previous example, in four periods $q_1=22.03$, $q_2=49.36$, $q_3=26.13$, $q_4=34.16$ (These numbers are generated by Microsoft Excel2007).
FIGURE 1: event tree that shows customer's purchase in each period

This tree shows many facts, for example in third period ($t_3$) estimated amount of purchase $q_3$ was equal to 26.13 $. But the event tree shows that in a real relationship market's risk may affect this amount. And amount of customer's purchase in $t_3$ is a variable amount from 13.37 $ to 71.70 $. In this example, we suppose the probability of increase and decrease equal to 0.5 ($p = (1-p) = 0.5$), then probability of appearance of each state in one period is equal. Now the final amount of each period could be calculated by multiplying the probability of each state to the amount of its, the below calculations show the final CLV. In this example we set percentage of seller's profit ($x$)=15% and discount rate ($i$)=10%.

$$CLV(\text{step 3}) = \frac{0.15 \times [0.5 \times 30.82 + 0.5 \times 17.62]}{1.1} + \frac{0.15 \times [0.5^2 \times 96.74 + 2 \times 0.5^2 \times 55.28 + 0.5^2 \times 39.48]}{1.1^2}$$
The final CLV (step3) is 20.52 $, then total profit that is gained from this customer in next four periods (eight weeks) is 20.52 $. In this example we supposed increase factor $u=1.4$ and decrease factor $d=0.8$, then in this market total trend of customer's demand is increasing. Comparing CLV in step3 (20.52) and step2 (15.54) shows this fact.

5. COMPARING CLV MODELS IN B2C AND B2B MARKETS

This paper is the third paper of our series of papers in developing a CLV valuation model based on environmental risk. In our first paper in this sequence, which is used in ref. 12, we describe our model for B2B high-risk relationships. On that paper, we divided B2B relationships into four different types, and introduce a CLV evaluating model for each type. That paper used real option analyses to find accurate customer value in B2B markets. That model had some limitation that makes it suitable only for B2B markets. In this paper we change our approach and develop a model based on real option analyses for B2C markets. The aim of this paper is to develop a CLV model by considering environmental risks in B2C e-commerce markets. Comparing these CLV models in B2B and B2C relationships lead us to two differences:

1- Usually, in B2B markets buying are done on long term or mid term contracts, then amount of buying and number of customers approximately are constant and pre-defined in contracts. Then estimating future demand is easier than B2C markets. We used only binomial distribution to determine how environmental risks make future demands to grow up or down in B2B markets. But B2C relationships almost haven't any contract and customer's demand fluctuates very fast in future. Then at first, we must estimate future demand by using normal distribution (mean and standard deviation calculated by history data of the customer) and then adapted it with a binomial distribution to show how environmental risks make demands to grow up or down in B2C high risk markets.

2- In our first paper we discussed about supplier's flexibility that is very important in B2B relationships. If supplier is flexible when customer's demand grows up, it will respond to the increasing demand. But if supplier's investment is limited, it won't respond to the increasing demand[11]. On that model we subtracted capital expenditure from customer value to calculate accurate CLV. Then our CLV model in B2B markets suggests to increase or decrease investment for a customer. Therefore, CLV model is a good way to make investment strategy in B2B relationships. But in B2C markets we face to a big majority of customers, and our CLV model in B2C market divides customers into appropriate segments. In this way, company could make different marketing plans for different segment of customers. Therefore, CLV model in B2C markets could make good marketing strategies instead of investment strategy.

6. CRITICAL DISCUSSION

As we said in the first of paper, most of CLV models were based on history of customers. It means that many of them calculate cash flow of each customer in previous periods and determine a value for each customer. This is a good way for determining customer value, but there are many environmental risks in real markets that cause customer's cash flow to decrease or increase in future periods.

In proposed model, we used real option analyses to predict future periods. Equation 11 and the following example in figure 1 show usage of real option analyses in this model. Figure (1) shows...
that all the future periods are calculated in this model and then the formula multiplies the value with their occurrence probably and finally these weighed values add to each others.

In addition, another difference in the proposed model shows in equation 3 and 4. In this model we didn't consider \( q \) (the customer's cash flow) a constant value. Instead of that, we consider customer's cash flow in future periods following a normal distribution. This assumption helps us to achieve a solution for B2C context.

The proposed e-CLV model has important implications for e-marketing theory and practice. The presented model according to the environmental risk is essential for the development of the CLV construct. Specifically, real option analysis represents a fundamentally new way of analyzing CLVs in e-relationships. To improve relationship management, continuous monitoring of CLVs in relationships is necessary [11]. Customer relationship management (CRM) systems may facilitate the assessment of CLVs by using data from marketing, market research and management accounting. CRM systems are especially useful for planning marketing strategy. Nowadays, websites compete with each other by using better and more accurate CRM systems.

Our model uses some mathematical functions to calculate CLV. These functions could be developed by software. Then CRM software could use our CLV model to determine customer's value automatically, and suggest different marketing campaign for different customers.

6.1 FUTURE WORKS AND STUDIES

Our model evaluates e-customer in high risk B2C markets. It works very accurately because it uses real option analyses to determine customer's future cash flows in each period of time. But there are two limitations in our models, that could be solved in future works.

The first limitation is that input parameters have to be estimated for the valuation metrics and are thus subject to an estimation error. Various estimated data are necessary to assess the CLV in buyer–seller relationships. Real option model is highly sensitive to the underlying input parameters such as probability of increase or decrease demand in the future \((p)\), increase or decrease factor for demand in next period \((u,d)\) and discount rate \((i)\). In the case of financial options, these parameters could be determined from historical market data. In the context of real options, these data are sometimes difficult to obtain, especially if the asset is not traded and market data are not available for the asset. Consequently, the necessary data have to be subjectively estimated and could be a source of error [20]. For future works it is a good idea to develop a model to estimate these parameters, accurately.

Secondly, Our CLV analyses were based on economic parameters. Soft factors such as trust, social bonds or closeness that contribute to CLVs in relationships are difficult to include, as they are generally difficult to quantify [11]. However, they may be introduced as moderating variables on a qualitative basis.

6.2 CONCLUSION

We develop a new CLV model to evaluate e-customer value in B2C high risk markets. Real options analyses help us to determine exact future cash flow of a customer and calculate more accurate CLV than NPV-based models. In addition, e-commerce context is very data-rich [1] and our CLV model by mathematical functions could use all of these data to find better CLV. Real option analyses lead us to binomial distribution that estimate future increased or decreased demands. One of the most important consequences of evaluating customers in our model is better decision in marketing management. This model is a good way to segment customers. By suitable segmenting, we can use better marketing strategy for each segment. In addition, if customer relationship management (CRM) systems use CLV model to evaluate customers, those could suggest better ideas for managing relationships between companies and their customers [21]. This paper's CLV model could be used in many CRM systems. And this model lead CRMs to better decision in high risk and real markets.
7. REFERENCES


The Reasons Social Media Contributed To The 2011 Egyptian Revolution

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Abstract

In recent years, social media has become very significant for social networking. In the past, its main use was personal, but nowadays, it's becoming part of all facets of our lives, social and political. In the first quarter of 2011, the Middle East has witnessed many popular uprisings that have yet to reach an end. While these uprisings have often been termed “Facebook Revolutions” or “Twitter Revolutions”, there are many ambiguities as to the extent to which social media affected these movements. In this paper we discuss the role of social media and its impact on the 2011 Egyptian revolution. Though the reasons for the uprising were manifold, we will focus on how social media facilitated and accelerated the movement.

Keywords: Social Media, Egyptian Revolution 2011, Facebook, Twitter, YouTube.

1. INTRODUCTION

This paper explores the impact social media had on the Egyptian Revolution in 2011 which encompasses the events that started on 25 January 2011 and ended with President Hosni Mubarak’s resignation on February 11, 2011, thus ending his 30 year old regime. [1 & 2]

The uprising began when inspired by the events in Tunisia which led to the ouster of the Tunisian President, the Egyptian people took to the streets and demanded an end to the government of President Husni Mubarak [1]. The people of Egypt had many grievances against the government, mostly related to political and legal issues, which motivated them to step out in the streets and demand changes. It is believed that social media played a very important role in the Arab Spring 2011, a wave of demonstrations and protests that has been taking place in the Arab world since 18 December 2010 [3].

According to a Cairo activist, “We use Facebook to schedule the protests, Twitter to coordinate, and YouTube to tell the world” [4]. The New York Times believed that Facebook and Twitter helped people in organizing and coordinating protests, by cross-communicating and information spreading [5]. In its annual analysis of the world's human rights, Amnesty International praised the role of websites such as Twitter and Facebook in igniting the biggest revolt against oppressive regimes since the end of the Cold War [6].

This paper explores the reasons due to which social media accelerated the Egyptian revolution. Even though the triggers of the revolution were numerous, social media played a very important part in uniting the youth of Egypt and helping them in organizing and coordinating the protests against the government. We look into the different factors due to which social media had such a huge impact on the revolution despite the government’s attempts to block and control it. These reasons include demographic factors as well as other factors which made social media a preferable tool for the Egyptian protesters.
2. LITERATURE REVIEW
Socially, revolution is defined as a drastic and far-reaching change in ways of thinking and behaving which will lead to a fundamental change in power and social structure, in a relatively short period of time. [7]

2.1 Social Media
To begin with, social media will be defined as follows:
Social media is a social tool of communication; it consists of websites that interact with the users, while giving them information. It includes a large variety of websites; The Social Bookmarking Websites (e.g: Del.icio.us, Blinklist, Simpy), where users interact by tagging websites and searching through websites bookmarked by other people; The Social News Websites (e.g: Digg, Propeller, Reddit), where people interact by voting for articles and commenting on them; The Social Networking Websites (e.g: Facebook, Hi5, Last.FM), where users interact by adding friends, commenting on profiles, joining groups and having discussions; The Social Photo and Video Sharing Websites (e.g: YouTube, Flickr), where people interact by sharing photos or videos and Wiki Websites (e.g: Wikipedia, Wikia), where users interact by adding informative articles on various topics and editing existing articles. Any other website that allows its users to interact with the site and other visitors is a social media website [8].

In the following section the three most effective social media websites during the 2011 Egyptian revolution, Facebook, Twitter and YouTube, will be discussed.

2.1.1 Facebook
Facebook is a popular social media website launched in February 2004 [9]. Facebook membership is free, but a user has to create an account with a valid email ID [10]. Facebook has various features; every member has his “Wall”, a page that allows his friends to post their messages to him; “Status” allows the user to share and inform his friends of his updated location and actions; “Photos” allow the user to upload pictures; “Poke” allows members to send each other virtual pokes, “News Feed” which highlights important information including profile changes, upcoming events and birthdays of a user’s friends [9].

“Facebookers” have the option to post and comment on their profiles, their friends’ Walls, pictures, and other personal information. They can keep in touch with their friends through status updates, messages or instant messaging. They can also create and join interest groups and “like” pages including pages created for brands endorsing advertisements [9]. Facebook can be used to browse and join different common interest groups, organized by colleges and workplaces, pull contacts from a web-based e-mail account, find friends using a search engine, and exchange messages including automatic notifications [9 & 10].

Today in May 2011, Facebook has around 700 million active users [11]. According to a study conducted by Compete.com in January 2009, Facebook is the most used social networking service [9]. It is also the most popular social networking site of the world [10], where 14 million photos are uploaded daily [12].

2.1.1.1 The Number of Followers
Facebook allows each user to have up to 1,000 friends per friend list. They can have the same friend on multiple lists as well. Users can have up to 100 friend lists [13].

2.1.1.2 Facebook Usage in Egypt
Facebook is the most popular social media network in the Middle East [14] and has 8,357,340 users in Egypt as of July, 2011 [15]. 78% of Egypt’s Facebook users are between the ages of 15-29 years and 22% users are above the age of 30 years [16]. In the second edition of a series of reports produced by the Governance and Innovation Program at the Dubai School of Government, it has been observed that among Arab countries, Egypt has seen the highest increase in the number of Facebook users in the first quarter of 2011. The report surveyed Facebook users in Tunisia and Egypt and also found that six out of 10 respondents in both countries said that blocking access to social media provided a boost to the revolutions [17].
According to the Egyptian Ministry of Communication, 70 million Egyptians own a mobile phone, constituting more than 87% of the population which provides them easier access to internet and social media websites [18].

2.1.2 Twitter
Twitter is one of the most popular social networking websites, launched in 2006. Twitter usage is also free. Members of Twitter can use the service to post and receive messages to a network of contacts. Members can build a network of contacts, and invite others to receive their Tweets, and can follow other members' posts. Twitter makes it easy to opt into or out of networks. Members can also choose to stop following a specific person’s feed [19].

Twitter users are able to send and read messages called tweets. Tweets are text-based posts of up to 140 characters displayed on the user’s profile page. Users may subscribe to other users’ tweets, which is known as “following” and subscribers are known as “followers” or “tweeps”. Users can group posts together by topic or type by the use of “hashtags”. “Twitter Lists” allow users to follow lists of authors instead of individual authors [19].

Twitter’s usage usually increases during important events. Tweets are publicly visible but senders have the option to restrict message delivery to just their followers. Users can tweet through the Twitter website, compatible external applications (such as for SmartPhones), or by Short Message Service (SMS) available in certain countries [19].

On June 2010, Twitter was estimated to have 200 million users, generating 65 million tweets a day, equaling about 750 tweets sent each second, and handling over 800,000 search queries per day. Twitter is sometimes described as the “SMS of the Internet”. Twitter is ranked as one of the ten-most-visited websites worldwide by Alexa’s web traffic analysis. A February 2009 Compete.com blog entry ranked Twitter as the third most used social network based on their count of 6 million unique monthly visitors and 55 million monthly visits. In March 2009, a Nielsen.com blog ranked Twitter as the fastest-growing website in the Member Communities category for February 2009 [19].

2.1.2.1 The Number of Followers
Twitter allows each user to send 250 direct messages per day, 1,000 updates per day. Retweets are counted as updates. Users can make 4 changes to account email per day. The technical follow limit is 1,000 per day. Once an account is following 2,000 other users, additional follow attempts are limited by account-specific ratios [20].

2.1.2.2 Twitter Usage in Egypt
The average number of Twitter users in Egypt between January and 30 March, 2011 was 1,131,204. The most popular trending hashtags across the Arab region in the first quarter of 2011 were #egypt (with 1.4 million mentions in the tweets generated during this period) #jan25 (with 1.2 million mentions), #libya (with 990,000 mentions), #bahrain (640,000 mentions), and #protest (620,000) [21].

According to Ossama El-Badawy, the Online Competitive Intelligence Manager, internet in Egypt witnessed a dramatic growth after the revolution with a 100%+ Twitter users growth during recent months [22].

2.1.3 YouTube
YouTube is a video-sharing website on which users can upload, share, and watch videos, launched in February 2005. Most of the videos on YouTube are uploaded by individuals, although media corporations like CBS, BBC, Vevo, Hulu and other organizations also upload their material. Unregistered users can watch videos, and registered users can upload an unlimited number of videos for free [23].

According to Alexa’s ranking, YouTube is the third most visited website on the Internet. As of October 2010, YouTube was serving two billions videos a week accompanied by advertising. According to James Zern, a YouTube software engineer, 30% of videos account for 99% of views on YouTube [23].
Videos uploaded to YouTube by standard account holders are limited to 15 minutes in duration. The file size is limited to 2 GB for uploads from YouTube web page, and to 20 GB if Java-based Advanced Uploader is used. Since June 2007, the interface of the website is now available with localized versions in 31 countries including Egypt. The interface is available in 30 different languages [23].

According to Ostrow, 2009, while other social media websites may see rise and fall in the future, YouTube is the only website that will continue to thrive [24].

2.1.3.1 The Number of Followers
To watch a video on YouTube, there is no need to register as a user. Anyone can watch the videos that have been uploaded on the website. The embedding option can be used to share the videos uploaded on YouTube on other social media websites. The embedding option makes it easier for people to promote videos and help them go viral [23].

2.1.3.2 YouTube Usage in Egypt
According to the report prepared by Techno Wireless, during the first week of the Egyptian Revolution 2011, Egyptian users viewed 8.7 million pages on YouTube. This number was reduced after the blockade of internet services by Egyptian authorities from 28 January until the first of February [25].

2.2 The 2011 Egyptian Revolution
The 2011 Egyptian Revolution refers to the events that started with a popular uprising on January 25th, 2011 and ended on February 11, 2011 with the resignation of the Egyptian President Husni Mubarak [2 & 3].

2.2.1 Demographics of the Protestors
In Egypt, a country where the proportion of young people is significantly larger compared to other age groups, the majority of the protestors were youngsters. Mostly unemployed, between the ages of fifteen to twenty-nine years old, the Egyptian youth formed the largest proportion of protestors. As of July 5, 2011, Egypt's population consists of 62.8% people between the ages of 15-64 years and 32.7% people belonging to the age group of 0-14 years [26]. Egypt is close to the peak of its youth bulge, for in the past few years this majority has started to decline as the share of fifteen to twenty-nine years old is decreasing. These youngsters are heading toward the job market, and facing lots of problems due to high unemployment rate [27]. According to a survey conducted to explore the way Egyptians used internet during the revolution, 28% of internet users relied on the Internet to stay tuned with the revolution news and updates. This percentage goes up to 63% among those who participated in the demonstrations [22].

2.2.2 Reasons and Triggers
Different forms of revolutions around the world have recurring patterns in common, that were also prominent in Egypt. According to Trotsky, poverty was not the only cause of revolution. For a revolution to happen, an electrifying spark is needed. For the past 30 years, violent death has been the most common catalyst for igniting rebellion. In 1978, the mass incineration of hundreds in an Iranian cinema was a trigger for the Iranian Revolution. Recently, the Tunisian vegetable vendor Mohammed Bouazizi set himself on fire which intensified the protests [28].

For decades Egypt has been hiding major problems that caused poverty, high prices, social exclusion, elite enrichment, unemployment and corruption in the country. Underlying reasons were always there, until a catalyst, the Tunisian revolution, triggered the Egyptians. Dozens of deaths at the hands of the pro-regime supporters amplified the protestors’ resolve to fight for freedom [29].

The revolution in Egypt was a result of accumulated misery and hardships that the Egyptians have been facing for decades; autocracy, high levels of corruption, and grinding poverty. Roubini said, “What has happened in Tunisia is happening right now in Egypt.” Similar protests in Morocco, Algeria and Pakistan are related not only to high unemployment rates and
to income and wealth inequality, but also to a very sharp increase in food and commodity prices [30].

A significant trigger to the Egyptian Revolution was the brutal death of Khaled Said in June 2010. The publishing of the graphic heart-breaking photos of his death by beating at the hands of the police took place on Twitter despite the government’s opposition [31].

Another trigger that initiated the revolution was a Facebook page “We are all Khaled Said” created in honor of Khaled Said. This page’s popularity soon increased to reach around 600,000 likes and the page acted as a key organizing centre for the Egyptian protests [32]. At the same time, a heart-breaking Youtube video footage of Khaled Said’s death was viewed by more than 500,000 people that further ignited their rage [32].

2.2.3 Social Media as a Tool in the Egyptian Revolution

"Why do the Tunisian youth ‘demonstrate’ in the streets, don't they have Facebook?" this was a joke quotation of a Jordanian newspaper, doing its rounds in Egypt [33].

Hosni Mubarak was forced to resign after 18 days of continuous protests in Egypt. The revolution was facilitated by the use of social media where most of the protests were organized. Social media has been a crucial tool in building the Egyptian movement, and was connected to the emergence of the new tech-savvy generation in the Muslim brotherhood. The Egyptian protestors included a vast number of internet-savvy, Twitter and Facebook users who coordinated the movement. The Egyptian government tried to protect itself by blocking social media sites but was unsuccessful, according to the media expert Walter Armbrust. It is important to stress that social media acted as a tool for the protestors and was not the sole basis for the revolution [36].

In his blog, Riyaad Minty, responsible for the social media services in Al Jazira, outlined the importance of Facebook for the journalists since it helped them actively follow the events. He insists equally that the social networks permitted Al-Jazira to be “Updated”. “Facebook and Twitter helped us foresee in advance, when and where future manifestations might happen”, he said [35]. The failed attempt of the Egyptian government to block access to the social media tools on January 26, 2011 during the heavy manifestation was quiet revealing. Social media tools were seen as the biggest digital threats of the government, sabotaging its ability to control [37].

Tunisia and Egypt have opened up the debate of the role of social media and its effect on movements. While revolutions occurred long before Twitter, it is now prominent that political phenomena can be accelerated by social media. These effects require reflection on the similarities of both 2004 Kiev and 2011 Cairo protests, and how technology and social networks played part in them. In both countries, manifestations seemed to break out of nowhere, mainly led by well-educated yet anonymous youth. Technology played a role in both. Back in 2004, Twitter was not available, but still Internet and mobile phones were major players. In Egypt, social media threatened the regime that reacted by blocking internet and social media; however, the blockade was not successful and numerous workarounds occurred [38].

For any mass movement to take place, a space for communication is needed. A few decades ago, this used to happen in bookshops and underground newspapers’ offices. Today, online spaces have been added to the regular ones on the ground. According to Ahmed, a social activist in Tahrir Square, online activist meetings replaced the regular secret ones that could have been broken up by the police; it was much safer [33].

Despite an initial five-day blackout of internet and mobile phones’ networks, social media outlets, Facebook and Twitter, continued to play instrumental roles in organizing protests in Egypt [39].

2.2.4 Speed of the Revolution

The Egyptian Revolution started on the 25th of January 2011 and ended on 11th of February 2011 lasting a total of 18 days, overthrowing the 30 years old Mubarak regime [28]. The
Jasmine Revolution in Tunisia, which ousted president Zine El Abidine Ben Ali, lasted 28 days [40]. The Egyptian revolution was the only one among several others that are still going on in the Arab Spring, 2011 that succeeded in overthrowing the regime in the shortest time period [3].

![Pie chart showing days and deaths of revolutions](image)

**FIGURE 1:** Days of Revolutions and Deaths that occurred during those Revolutions

As shown in the above pie charts, the Egyptian revolution is the second shortest revolution in terms of both, the number of days it lasted and deaths during the revolution [28].

2.2.5 How Social Media Was Used in Some Other Revolutions

According to Fadi Salem, Fellow and Director of the Governance and Innovation Program at the Dubai School of Government: "It is no coincidence that Tunisia witnessed an 8% sudden surge in the number of Facebook users during the first two weeks of January 2011, coupled with a shift in the usage trend from merely social in nature into primarily political." [41].

Traditional media also played an important role in the Tunisian Revolution. The coverage of protests in Tunisia by Al Jazeera, the international television news network headquartered in Dubai, sparked protests in other countries including Egypt. However, the importance of social networks in helping activists to transmit popular anger through user generated content into organized protests cannot be ignored. In 2001, social networking technology was used by Filipinos when a million protestors were motivated by a chain of text messages to occupy one of Manila’s main highways and demand the resignation of then President Joseph Estrada. In 2003, text messages saying, “There is a fatal flu in Guangzhou,” spread awareness about the existence of the SARS virus in China and forced the Chinese government to acknowledge the problem. Next year, in Spain, young voters assembled by text message the day before an election led to the defeat of the ruling party and the end of the country’s participation in the Iraq War [42].
2.3 Influence of Social Media on the Egyptian Revolution

2.3.1 The Acceleration Effect
Nowadays what used to take a year to be created and implemented is possible in a few weeks. Businesses have changed the way their transactions are carried out due to five new technologies: business collaboration; social media; analytics; business mobility; and cloud computing. Scarce resources, time and information can now be used effectively [43].

According to Riyaad Minty, responsible for the social media services in Al Jazira, social media made it easier for reporters to find contacts, respond directly live and have discussions with journalists [35].

Stowe Boyd, social philosopher and blogger, observes that ideas spread more rapidly in densely connected social networks. Social media was a crucial speedy tool for empowering regular citizens to make their voices heard, and provided them with an opportunity to participate in a movement [32].

According to Duncan Watts, a principal research scientist at Yahoo! Research, social network can create an “instantaneous phase transition”, a fast change that would have taken much longer without its use [38].

2.3.2 Source of Info for News Agencies
International politics has been radically shaped with the appearance of social media. Politicians or even presidential candidates have been constantly campaigning online to gather support. The political institution’s pride has been overcome to break all the communication taboos. Unable to adapt, news media exclusivity has also been transgressed; internet has contributed to cheaper, less official forms of press releases. Media passively report on these posts; media’s role is changing to restate already published stories posted online. The news release time has drastically decreased, as updates are instantly “Blackberried” to journalists. Big news agencies are setting up their own official blogs, with their journalists commenting on copied breaking news. News coverage is becoming the population’s duty, instead of the reporters’ on-site coverage [44].

Twitter has always become an important source of breaking news and live events, endorsed with photos and videos from on-the-ground witnesses. This can be attributed to Twitter's "early adopter period" when it first gained popularity in business settings and news outlets attracting primarily older users [45].

2.3.3 The Blockade
On January 25, protests started throughout Egypt. On January 26, the Egyptian government blocked internet access in most of the country when they realized the protestors were using social media to coordinate and organize the protest [1]. During the first two days of the demonstrations, Egypt blocked Twitter and then Facebook before forcing ISPs to shut down [46].

The Egyptian government blocked social media sites and even mobile phone networks. Despite the blockade, satellite channels like Al-Jazeera broadcasted live coverage minute by minute, getting updated reports from correspondents using landline connections [33].

Another reason for the failure of the blockade was that the protestors had already expected it from the government and were prepared for it. A Facebook event, set up days in advance, received tens of thousands of attendance confirmations and a Google document posted to a Facebook group collected email addresses of the group’s members in case of a blockade. Many projects aimed to help the Egyptians in getting heard over phone lines onto the world wide web: Stop404.org, an Egyptian-Lebanese collective effort, offered a "live audio news bulletin from activists inside Egypt", while the Twitter account @jan25voices provided brief sound bites and text updates from phone calls back to the country. Global Voices was aggregating tweets and blog posts from still-connected Egyptians [46].
According to Wael Ghonim, "One of the strategic mistakes of [the Mubarak] regime was blocking Facebook. One of the reasons why they are no longer in power now is that they blocked Facebook. Why? Because they have told four million people that they are scared like hell from the revolution." [47].

3. HOW SOCIAL MEDIA FACILITATED THE 2011 EGYPTIAN REVOLUTION
In this section, the features that made social media an attractive tool for the Egyptian protestors will be discussed and analyzed.

3.1 Accessibility
One of the many reasons social media played an important role in the Egyptian Revolution, 2011 was its accessibility. The following factors make social media easily accessible:

3.1.1 Low Barriers to Entry
Social media accessibility is free of charge/licenses/affiliations; it is granted to everyone. Social media is the newest in a long line of information sharing innovations. Nonetheless, it is the most accessible and thus significantly impactful [38].

Free access to social media has democratized influence and control, to shift the power from authorities to regular citizens [49].

Social media is widely accessible uncontrolled media; the barriers to entry are almost nonexistent. These tools are truly revolutionary and have been used to support activists’ key tasks: amassing support, communicating with like-minded people, and spreading the word [37].

The first barrier of entry to the social networking services is becoming a member of a social media website. These websites require reasonably small effort and time to get started. They have relatively simple sign up forms and it is pretty easy to find friends as well [50].

In order to become a member of a social media website, all that is needed is to add up some basic information to create a profile, and then search for contacts. Later, the online interaction will naturally increase the number of connections. Most social networking sites have their own jargon to describe actions on the site, and these are relatively easy to figure out, or a new user can check the “Frequently Asked Questions” section to find a definition [51].

To have a Facebook account, which is free, a user has to navigate to the “Sign Up” page, provide his/her name, gender and date of birth, a valid email address and a password. After the sign up form is completed, an email will be sent to the provided address. Clicking on the confirmation link will complete the process [13].

To sign up for Twitter and YouTube, which are also free, a similar process is performed [52 & 53].

In order to watch, embed and share YouTube videos, an internet user does not have to sign up for a YouTube account. All videos uploaded on YouTube can be viewed by the public. But a registered “YouTuber” can create his/her own videos, and comment on the videos posted on the YouTube page [23].

The second barrier of entry is adding people to one’s network. In both Facebook and Twitter a user can search all users, not just friends of friends. The search is simple, and is done by typing in the quick search box, the name or/and email of the person [50].

Most of Facebook’s features are based on the idea that users like to stay in touch with and connect with people in their lives. The Friend Finder application on Facebook automatically runs a check of the emails in one’s address book finding those who currently have profiles on Facebook and suggests them as friends to the users. Additionally, Friend Finder prompts the user to invite his/her non-Facebook contacts to join the network [54].
On Twitter, one can browse a list of accounts related to his/her interests [55].

Once you become a member, you have to maintain the account. This includes updating and improving personal pages, searching for people that have joined, and adding them to friend lists [50]. The website administration also keeps asking additional security questions from time to time to improve the account security [56].

3.1.2 Low Communication Barriers
Social media has been useful in breaking the communication barriers that hinder transmission of a message. Whether it is a political campaign, a manufactured-product publicity campaign, or even an emergency-response service, now different industries are employing social media to their best advantage [48].

Since online interaction requires no interpersonal skills, the number of people socializing online is sharply increasing. People can treat each other as a bunch of online protocols. Communication becomes easier by transcending many codes of behavior; one can approach a complete stranger, he/she can discuss private issues with much less hesitation, disclosing even the most private secrets. Online users can engage in the hottest debates assertively to defend their views, what many cannot do in the real offline world. With a few clicks, they can cross out whomever they don't like. With less interaction barriers, they can get pretty communicative to express their outlook, and even attract supporters [57].

According to Helen Farrar, head of internal communications at Virgin Media, social media is moving “water cooler conversations” into the public arena, making it easier to understand people’s messages and emotions. In summary, barriers of communication are fading. This is bringing dry topics to life, coordinating the work of people at different departments [58].

3.1.3 Easy to Use
Connecting on social media networks with family and friends is fairly simple. Most popular social media tools are easy to figure out, even without instruction manuals [59].

Technically, the usability of social media pages is uncomplicated:

1. Most social media websites have a straightforward user interface. They are simple in terms of design and colors, and are context-sensitive, displaying features only on demand. The aim is to keep a clear content, where conversations can take place smoothly [60].
2. Good usability requires good search functionality, and social media provides a soft multi-dimensional experience; apart from the traditional search, advanced search can be categorized by communities or interests, and even filtered from the most to the least relevant results [60].
3. This will allow users to join selective groups. Likewise people can meet those with common focus, and find out more about their topic of interest [60 & 61].
4. Call-to-action buttons are placed prominently, mostly like a real button to make it easily identifiable and motivational to be clicked. Sometimes icons or small illustrations are used as well [60]. The interface content is clearly readable, where content blocks are visually separated by colors or designs [60].
5. The sign-up-form is short with straightforward questions [60].
6. The interface provides real-time updates as soon as events occur by signaling with an eye-catchig notice, to get the user's attention on any changes [60].
7. A member's interface is usually personalized and user-centered; recommendations and suggestions are often provided, after learning about the user’s interests, based upon his online activities. Additionally, social media facilitates “Word-of-Mouth Advertising”; members can easily invite friends to the network, and share links and videos, and thus spread the word in social circles. Moreover social media creates the “network effect”, which is the effect the user of a service has on the value of that product to other people. Consequently, the accumulation of small network contributions can result in highly used applications [60].

Social media networks work by the actions of its users and are extremely user-centric. They provide required relevant information to the users, and offer a one-click-interface that makes it easy for them to manipulate their pages. It is a customized service that makes it attractive and easier to be used [60].
Since the social network applications are created for public, they are user-friendly, facilitating the interactive process of utilizing it [60].

### 3.1.4 Mobile Phone-enabled Technology

According to Facebook statistics, there are more than 200 million active users currently accessing Facebook through their mobile devices. People who use Facebook on their mobile devices are twice as active on Facebook as non-mobile users. Additionally, there are more than 200 mobile operators in 60 countries working to deploy and promote Facebook mobile products [62].

During protests in Egypt, Tahrir Square was teemed with mobile phones, graffiti, journalists, camera crews, etc. When some forms of media were blocked, others were still available to help the protestors. Mobile phones' cameras were used to record footage of manifestations. Later, pictures and movies were broadcasted and/or displayed online [33].

Popular social media sites such as Facebook can be accessed via mobile phones. These web-based social networks are extended to mobile access, through mobile browsers and Smartphone applications [63].

Facebook mobile products work on all phones with mobile web access. All that is required is to download via any mobile browser the free mobile application, and the user will enjoy navigating his/her page from his phone. Additionally, “Facebook Text Messages” services include updating “Status” and messaging friends, using mobile text messages. It also entitles receiving text messages with status updates, messages and “Wall” posts as they happen [64].

iPhone, Android, BlackBerry, Windows Phone7 and iPad carriers can easily download a free Twitter application via their mobile browser, and enjoy the Twitter mobile products. Another alternative applicable to any mobile phone is the Twitter via “SMS” service [65].

Mobile phones played a major part in organizing demonstration in Egypt, and that was the reason cellular network was blocked by the government. Autocratic regimes can no longer control information spread to monopolize their power [66].

During protests, Cairo streets were crowded by people taking pictures and videos from their cellular phones. As a result, cameras and mobiles phones were ripped from their hands, and even from the journalists’ hands. [67]

Mobile phones appeared to be the most tangible technology during the revolution. Basically, text messages and calls were used to coordinate and communicate the protests. Beyond that, mobile phones allowed protestors to document the events by posting photos and videos. It enabled them to write history. [68].

### 3.1.5 Embedding Option

YouTube allows people to embed clips anywhere, from blogs, to social networking profiles, to the front page of popular websites. YouTube initiated this concept and it has become a driving force behind the collective 1 billion minutes users spend every day watching YouTube clips. It helps people and concepts “go viral”. Many types of content can now be embedded including documents, music or maps. The embedding concept is one of the most important innovations in social media in this decade. YouTube is no longer dependent on any other social network to be successful. With the decline in popularity of MySpace, YouTube has become just as popular for sharing clips on Facebook, Twitter and other online communities [24].

Each YouTube video is accompanied by a piece of HTML, which can be used to embed it on a page outside the YouTube website. This function is often used to embed YouTube videos in social networking pages and blogs. Embedding can be disabled by the video owner. Embedding makes it very easy to share articles, photos and videos through several social media websites [23].
3.2 Credibility

3.2.1 Truth From Compelled Youngsters

Egypt’s Facebook community is one of the youngest in the Middle East. 78% of Egypt’s Facebook users are between the ages of 15-29 years and 22% users are above the age of 30 years [16 & 69].

Wael Ghonim, a 30 year old Egyptian, was chosen as the most influential personality of 2011 by Time Magazine [70]. Wael is a Google executive who is considered the mastermind of the Egyptian revolution. Ghonim started a group on Facebook “We are all Khaled Saeed” in memory of an Egyptian who was brutally killed by the Egyptian police. Using his Facebook page, he helped in organizing protests and motivating the youth to continue protesting against the government [71].

Ghonim was a marketer who branded the revolution and convinced people to trust it. Ghonim had great dislike for police violence and used his Facebook group to promote video clips and newspaper articles about police violence. He constantly kept on reminding people that they should continue to fight for their country. His page attracted hundreds of thousands of people and the idea of revolution took root in peoples’ minds. He constantly interacted with the followers. When “day of silence” was planned in Cairo, he polled the users on the color of shirt they should wear. When the Tunisian Revolution ended, he used Facebook to organize a public protest. He asked 50,000 followers to pledge their support for the protest, but 100,000 protestors signed up. The revolution was pre-arranged just like the launch of a successful brand. Another benefit of using social media was that users from Tunisia and Serbia were able to share ideas and give advice to the Egyptian protestors, thus overcoming the geographical boundaries. The youngsters from Egypt and Tunisia shared different methods that could help in evading surveillance and shared tips on how to overcome any barriers posed by the police like rubber bullets. This helped in preparing the protestors beforehand for any barricades or tactics that might be used by the police to stop them. Social media helped the protestors stay one step ahead of the government and police during the revolution, thus giving them competitive advantage. When the government unblocked internet on February 1, 2011, the number of Facebook users increased by 100,000 [71].

3.2.2 Organic Uncensored Unedited Info

According to a research conducted by Pear Analytics in which they analyzed 2,000 tweets over a two-week period in August 2009 from 11:00 AM to 5:00 PM (CST), the tweets were divided into six different categories: 40% of the tweets consisted of pointless babble; 38% of the tweets were conversational; 9% were pass-along value; 6% were self-promotional; 4% were spam and 4% were news. Even though the percentage of tweets that shared news was low, most people who use social media sites like Facebook and Twitter share the everyday happenings in their status updates and Twitter usage typically increases whenever something important is happening. Thus the conversational tweets and those of pass-along value during such times mostly contain information about the latest developments [19].

Tweets and Facebook posts and YouTube videos served as transparent content for online users as well as cable news networks such as Al-Jazeera [32].

3.3 Instantaneous Updated Information Sharing

In his blog, Riyaad Minty, responsible for social media services in Al Jazira, affirms that the social networks helped Al-Jazira in staying “Updated”. “Facebook and Twitter helped us foresee in advance, when and where future manifestations might happen”, said Minty. “They also made it easy for us to find contacts to respond live and discuss the latest developments with journalists [35].
Social media helps in getting real-time information. According to Duncan Watts (researcher and a principal research scientist at Yahoo! Research), social network can create an “instantaneous phase transition”, a fast change that would have taken much longer without its use [38].

Social media keeps users informed with its constant location updates, live streaming videos and instant photo uploads [72].

It amazingly covered the Egyptian revolution by providing constant updates and immediate feedbacks, all in the form of action and reaction [73].

3.4 Multi-Dimensional Media
According to Facebook statistics, there are over 900 million objects that people interact with (pages, groups, events and community pages). An average user creates 90 pieces of content each month (web links, news stories, blog posts, notes, photo albums, etc.) [62]

### 3.4.1 Multi-Communication
The social media network includes a variety of interfaces that are interrelated and mostly complementary. Some of the different services provided by social media and the websites that provide them are given below:

2. Microblogging: FMyLife, Foursquare, Jaiku, Plurk, Posterous, Tumblr, Twitter, Qaiku, Google Buzz, Ident.ca Nasza-Klasy.pl
3. Location-based social networks: Foursquare, Geoloqi, Gowalla, Facebook places, The Hotlist
4. Social networking: ASmallWorld, Bebo, Cyworld, Diaspora, Facebook, Hi5, Hyves, LinkedIn, MySpace, Ning, Orkut, Plaxo, Tagged, XING, IRC, Yammer
5. Events: Eventful, The Hotlist, Meetup.com, Upcoming
6. Information Aggregators: Netvibes, Twine (website)
7. Online Advocacy and Fundraising: Causes, Kickstarter [71]

### 3.4.2 Multimedia
The social media network is a multimedia tool that enables sharing:

1. Photography and art: deviantArt, Flickr, Photobucket, Picasa, SmugMug, Zoomr
2. Video: sevenload, Viddler, Vimeo, YouTube, Dailymotion, Metacafe, Nico Nico Douga, Openfilm
3. Livecasting: Justin.tv, Livestream, OpenCU, Skype, Stickam, Ustream, blip.tv, oovoo, Youtube
5. Presentation: scribd, SlideShare [71]

FIGURE 2: The VEN diagram of social media. [39]
3.5 Overcome the Social Differences and Physical Distances
The latest technology is erasing common communication barriers such as physical distance, overcoming isolation and transgressing privacy and even standards, by creating new ones [44].

As a student at Harvard, Mark Zuckerberg started Facebook in 2004, to get Ivy League students to easily identify and connect with each other. In other words, his purpose was to help people with similar interests and backgrounds find each other, stay connected and share news of mutual interests [75].

Social media helps in gathering real-time information, by facilitating the “weak ties”, that is, the physically distant and socially diverse relationships across the globe. The two revolutions (Ukrainian and Egyptians), both significantly shaped by internet usage, were peaceful, since both were socially driven, as opposed to those hierarchically driven. Socially driven revolutions are subject to views from different perspectives and social classes [38].

With Facebook and Twitter and the like, barriers between the political authority and the public have been lifted, to make it easier for the regular citizens to contribute and make their worries heard [76].

Even in companies, social media brings dry topics to life, coordinates the work of people at different places, and creates ties between people who usually do not find a need to interact in real life. At Asda Stores Ltd., a British supermarket chain, face-to-face communication between its 170,000 is combined with social media activities to provide bigger opportunities for sharing and working together. [58].

Social media seems to be narrowing the communication gap, to connect people of different ages, gender, ethnics, etc. [77].

The Egyptian mass movement of 25th January unified different groups to call for one goal. Groups were varied socially and politically including workers, bloggers, democracy campaigners, senior judges, and even the followers of different religions such as The Muslim Brotherhood and Coptic Christians. Diversified communication media, including the social media, were used to get the message across [32 & 33].

Coming from different sectors of society, Egyptian protestors at the forefront included young tech-savvy Egyptians, the Muslim Brotherhood, a UN former nuclear agent Mohamed El Baradei, businessmen, lawyers, academics, etc. The strength and cohesiveness of the first protests was stunning. They were scheduled to occur in several cities in addition to Cairo, and reached Alexandria, Nile Delta, Suez and Ismailiya [29].

3.6 Empowering Tool for Everyone
After being excluded from the political scene for a long time, the Arabic youth found in the new technology a means to make their voices heard around the globe. “Thanks to these new means of communication, the young are not spectators anymore, they have become news makers”, explains Joe Khalil. The online forums enabled the general public to challenge the monopolies of power in the country. Social media was a crucial speedy tool of empowering regular citizens, and provided them an opportunity to participate in a change [32]. Suddenly passive citizens stood up for their rights and defied authority [38].

In his article, Solaris (2009) writes: “As passive individuals, we are starting to experience a powerful validation and significance by the use of social media; we are becoming influential and active. The social revolution calls for distributed participation and resolution. Due to social media, regular people are empowered to engage, and if not, they are intentionally removing themselves from the radar screens of influencers and decision makers”. [49]
3.7 Cumulative Effect on Emotional Build-up
According to Gladwell, a Canadian writer for the New Yorker, social media could not be considered a necessity or a cause for a revolution to take place, but it does play a major role; it extends social networks and makes them more significant [76].

Social networks’ main role is to spread information and coordinate actions. These modern networking theories came after the investigations into how crickets and Malaysian fireflies can synchronize their actions without a leadership structure. According to Brian Solis, a digital analyst and principal at Altimeter Group, the density of network, due to facilitated connections, was a major decisive factor in the events of Egypt [38].

The phenomenon of social media has redefined self-interest, by replacing the individualistic attitudes (Me First) with a collectivistic spirit (We First) [32].

In a 2007 story in the New York Times, a market research firm (Yankelovich) estimated that 30 years ago, an average person was exposed to about 2,000 messages a day, compared to about 5,000 today. The actual number varies depending on the sources, estimating that this can reach about 9,000 impressions daily. In fact, the proliferation of social media exposes us directly and indirectly to messages and impressions [49].

In their book Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives, Nicholas Christakis and James Fowler discuss how relationships can be contagious. The fact that one’s behavior and actions can impact a complete distant stranger through regular social transfer is quiet interesting. The cumulative effect of this transfer increases with the use of social media networks [82].

A recent study conducted by Facebook data scientist, Adam D.I.Kramer, found that emotions are contagious. While psychologists have long known that people exposed to a person experiencing strong emotions may experience similar feelings, catching them through facial expressions, tones of voice or some other means, nowadays social media has become the means of transmission. In his study, Adam D.I. Kramer analyzed postings by about 1 million English speakers and their roughly 150 million friends in several countries to show that the words people use in their status updates influence the emotions of their online friends for days. It was found that people who use strong emotional words like “happy,” “hug,” “sick” and “vile” in their status updates ignite similar emotions in later Facebook postings by their friends [79].

Social media has helped spread cognitive dissonance connecting opinion leaders and activists to regular citizens, which quickly expanded the network of anti-regime protestors. According to Brian Solis, these social outlets increased the “density” of connections, which was the cause of “unity” among protestors. Similarly according to Stowe Boyd, “Ideas spread more rapidly in densely connected social networks. So tools that increase the density of social connection are instrumental to the changes that spread. And, more importantly, increased density of information flow (the number of times that people hear things) and of the emotional density (as individuals experience others’ perceptions about events, or ‘social contextualization’) leads to an increased likelihood of radicalization: when people decide to join the revolution instead of watching it.” To understand this density and its impact, three dimensions should be considers: vertical, horizontal, and the compounding effect of social media from one country to another [32].

1. Vertical Threshold: Relative to United States and Europe, social media has little penetration in the Arab world with its 21 million Facebook users. One of the triggers that started the revolution, was the Facebook page created in honor of Khaled Said. This page increased in popularity to reach around 470,000 “fans”. In parallel, the Youtube video showing Khaled Said being beaten by the police was viewed by more than 500,000 people which fueled further rage. As a result, low penetration of facebook in the country was overcome by the vertical scaling through crucial facebook pages such as Kaled Said’s, Asmaa Mahfouz’s (a 15-year old), and Wael Ghonim’s (a Google executive).

2. Horizontal Expansion: Social media expanded the lines of protestors from young tech-savvy students to doctors, lawyers, judges, Christians, women, State TV personnel, and most importantly foreign supporters.
3. Compounding Effect: In different countries other than Egypt, social media played a crucial role in extending connections between people, thus increasing density, circulation and consequently rage buildups [32].

Through social media, the user’s voice is amplified and transmitted in the form of online word of mouth; this happens due to several components:
1. The user talks to similar people (in terms of demographics, interests, etc.).
2. The user talks to many people at the same time.
3. The user is free to self-express his/her concerns, opinions [73].

Social media has a great power to influence through its inherent features and design. It has a considerable ability to create an impression and influence people from just one post on Facebook, Twitter or YouTube. In his book “Tribes”, Seth Godin calls this phenomenon the age of leverage, and considers it a threatening one to the status quo.

![FIGURE 3: Social media ROI pyramid](image)

3.8 Contagious Effect, Social Epidemics
In their book Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives, Nicholas Christakis and James Fowler discuss how relationships can be contagious. Contact between individuals and their networks of people can either directly or indirectly influence their lives; they explain how common social epidemics are spreading fast, observing how obesity is contagious, the rich get richer, etc. Although we prefer to be at least in self-control, yet most of what we do, from what we eat to who we sleep with, and even the way we feel, is significantly influenced by those around us and those around them, and those around them. Our inter-related shared actions can affect beliefs and change behaviors of people we’ve never met. Similarities are increasing around the globe, with globalization internationalizing every fad, disseminating every contagion, unifying every market, and increasing challenges. Social networks are becoming the hub of diversity meetings. They harbor a flow of intense emotions that can be actively shared to touch hearts, shake feelings, shape perceptions and thus behaviors. The author suggests that our happiness is connected with the happiness of people three degrees removed from us; whether we’re happy or not depends in part on our friends’ friends’ friends. [82]

In his book The Tipping Point, Malcolm Gladwell says that new fashion trends, increase and decrease in crime rate, the transformation of unknown books into bestsellers, increase in teenage smoking or the phenomena of word of mouth are all examples of social epidemics. According to Malcolm Gladwell, three characteristics; contagiousness, the fact that little causes can have big effects; and that change happens not gradually but at one dramatic moment – are the principles that define how epidemics spread. But the third is the most important because it is the principle that provides insight into the way modern change happens. Epidemics are an example of geometric progression: when a virus spreads through a population, it doubles and
doubles again, until it has (figuratively) grown from a single sheet of paper all the way to the sun in fifty steps. According to Malcolm, epidemics tip because of the astonishing efforts of a few carriers or when the epidemic agent is transformed. In order to make sure a message is not ignored, it is very important to ensure that it makes an impact and sticks in the memory of people. There are methods of making a contagious message memorable by making small changes in the presentation and composition of information that can make it stick. Epidemics are strongly influenced by their situation, by the circumstances and conditions and particulars of the environments in which they operate [83].

3.9 Uncontrollable Flow of Information

In the age of internet, global transactions at different levels can be executed through online messaging; from raising money in Moscow, to having scoop stories appear in The Guardian. Since most of the information is outsourced, it is not possible to control what is said online, which gives space to oppositions to self-express freely [44].

Although the Egyptian security forces set up a special unit to monitor internet activists, it was impossible to track the vast numbers of online users. Shared connections could be accessed everywhere [33].

Twitter was positioned by its founder as a news-bearing medium which was obvious during the Egyptian protests; Twitter flooded with links, images and information about the crisis. Despite the internet blockade in Egypt, news, images and videos continued to spread around Twitter [85].

In an attempt to squash the protests, Mubarak blocked the internet access on the 28 of January 2011. Despite this blockade, obviously some Egyptians were still able to access the net through workarounds. Below is the Twitter timeline during the crisis. During the shutdown, people tweeting by less than half in comparison to their normal rate, are colored by red. (Some nodes have been removed due to a lack of data). Although the shutdown affected a huge part of the Egyptian network, yet those affected regions remained dense due to active nodes; in fact many Egyptians were still connected to people who had the internet access [86].

The following diagram shows every single tweet from the network in Figure 4 from January 24 to February 3. Each node in the network corresponds to a row of tweets. Obviously there is a significant chute on the 28th, the first day of the blockade. However, many were still finding a
way to tweet a little. The blockade did not prove completely successful. During that same period, notably a significant rush in tweets from the blue nodes occurred, showing the sense of urgency the shutdown created [86].

4. RELATED WORK
The 2011 Egyptian Revolution gained a lot of attention regarding its effectiveness and the speed with which it succeeded. It has been termed “Facebook” or “Twitter” revolution by many people. There are skeptics who do not believe that social media played a major role in the revolution. According to Navid Hassanpour, the biggest factor that fuelled the Egyptian revolution was the internet shutdowns by the government. According to Hassanpour, after the shutdowns, the movement intensified and spread to more parts of the population [87]. According to Zack Brisson, social networking is an important force in some parts of the Egyptian society. People under 35, middle-class and above mostly use it as a source of news and information. The most popular social networking platform is Facebook [88]. Malcolm Gladwell says that revolutions took place before the social media and social media did not play any significant role in the 2011 Egyptian revolution [89].

5. CONCLUSION
Social media has become an integral part of today’s political culture. It helps minorities and youngsters in making their views heard. Even politicians now use social media to gather support and interact with their supporters. The popularity of social media is increasing at a very fast pace among the youth. One of the reasons is its easy accessibility and user-friendly features. Social media is freely accessible, which makes it very attractive for the youth and the general public who use social media websites in order to interact with their friends and relatives, and also to stay updated as to the current happenings. Instead of ignoring the role social media can play in social and political movements, the focus should be on how to use social media to its best advantage.

Social media played an important role in many social movements, but its main purpose has been to facilitate in organizing movements and holding discussions. Social media itself cannot be termed as a trigger for the revolutions. In the 2011 Egyptian Revolution, social media’s main role was as a facilitator and an accelerating agent. Social media helped the Egyptian youth in holding online discussions and meetings, organizing protests and staying updated. The increase in the number of social media users and the increasing traffic on social media...
websites shows that social media played an important role during the revolution. Even when
the Egyptian Government blocked social media and later, internet access, it wasn’t possible to
completely control the flow of information to the outside world as numerous workarounds
occurred. Social media became an invaluable tool for the protesters as it helped them in
coordinating and later, sharing the latest events with the outside world.

Social media is considered a credible source of news and updates. This might be because
most of the news and updates come straight from the eye witnesses and are uncensored and
unedited. Traditional media is also utilizing social media sources in order to gather and share
the latest updates and live events.

Although the actual numbers of social media users in Egypt was small, the majority who was
connected to social media was politically active and influential enough to gather the support of
a large number of people. If used properly (as witnessed in Egypt), social media can help in
converting a popular trend or movement into a social epidemic (or “going viral”), thus
accelerating its growth at a much faster pace.

6. RECOMMENDATIONS FOR FUTURE WORK
We have the following recommendations for future work:
1. A comparative study of the several uprisings in the Arab Spring 2011 can be conducted in order
to find similarities and differences.
2. It can be compared to other revolutions (like Tunisia) in order to identify the factors due to which
the Egyptian Revolution succeeded in overthrowing the government in a very short time period.
3. A time-series analysis can be conducted in order to compare the recent social media
revolutions with some of the successful revolutions in the past.

7. REFERENCES
www.huffingtonpost.com/2011/01/30/egypt-revolution-2011_n_816026.html, April 1, 2011
[June 5, 2011]

30, 2011 [June 10, 2011].


[5] “Human impact of Internet use” Internet:
www.wikipedia.org/wiki/Human_impact_of_Internet_use#Internet_and_political_revolutions,
July 29, 2011 [June 20, 2011].

[6] “Internet is double-edged sword in Arab revolts: Amnesty” Internet:
13, 2011 [May 20, 2011]

2011].

[8] D. Nations. “What is Social Media?What are Social Media Sites?” Internet:
www.webtrends.about.com/od/web20/a/social-media.htm, [June 20, 2011].


www.socialmediatoday.com/soravjain/195917/40-most-popular-social-networking-sites-
world, October 6, 2010 [June 14, 2011].


[56] “Facebook” Internet:www.facebook.com, [June 4, 2011].


[65] “Take Twitter with you”. Internet: http://twitter.com/#!/download, [May 19, 2011].


[72] Suebob. “You may find this hard to believe, but I am an introvert. I have a “role” to play, but I fundamentally am a loner”. Internet: http://mashable.com/2008/08/15/irony-alert-social-media-introverts/, Aug. 10, 2008 [May 22, 2011].


8. LIST OF ABBREVIATIONS
1-AFP: French news agency
2- The Republican Party nominee for Vice President
3- Swiss Pharma: A leading pharmaceuticals company in the area of Healthcare.
4- MTV Video Music Award (commonly abbreviated as a VMA), is an award presented by the cable channel MTV to honor the best in music videos.
5- PayPal is a Web-based application for the secure transfer of funds between member accounts.
6- GB (gigabyte) is a multiple of the unit byte for digital information storage. 1 gigabyte = 1000000000 bytes.
7- Java is a programming language that derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities.
8- YouTube's Advanced Uploader helps users reliably upload large files to the site (up to 20GB). By using Java on the client side, the file is transmitted in chunks ensuring each piece of the file is received before sending the next.

9- Cable News Network (CNN) is a U.S. cable news channel founded in 1980 by Ted Turner.

10- The New York Times is an American daily newspaper founded, and continuously published in New York City, since 1851.

11- User interface describes the way people interact with a site and the way users can access its functions.

12&13- It is a location-based social networking website based on software for mobile devices.

14- User-centered design (UCD) is a design philosophy and a process in which the needs, wants, and limitations of end users of a product are given extensive attention at each stage of the design process.

15- A blog is a type of website or part of a website. Blogs are usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order.

16- Microblogging is another type of blogging, featuring very short posts.

17- Hashtag symbolized by #, is used to mark keywords or topics in a Tweet. It was created organically by Twitter users as a way to categorize messages.
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