



EMERGENCE OF BUSINESS TEAM LEADERS: VIRTUAL GROUPS IN MENA

Dr. Caroline Akhras

Associate Professor, Notre Dame University, Lebanon

ABSTRACT

Local and multinational firms rely on internal and outsourced teams to address company transactions. Business firms generate business teams in house as well as virtually to handle simple or complex business processes and procedures related to local, regional, or global issues. Many times, business teams are self-managed. Virtual groups are an essential component in the competitive global environment, shaping success and failure, especially in the Middle East and North African Region (MENA). This case study focuses on the emergence of leadership inside virtual teams. The aim of this paper is twofold: to observe and identify team behaviour prior to leadership adoption and to observe and identify team behaviour following adoption of leadership. Data was gathered using face-to-face interviews and two surveys. It was found that four key factors played an instrumental role. Based on the results, it is recommended that further research be conducted in order to better understand this important managerial function.

Keywords: Emergence of Leadership, The Role of Leadership, Virtual Groups, MENA, Interpersonal Behaviour.

1. INTRODUCTION

Leadership matters more than ever. In the challenges of managing today's business organization, leaders are stepping outside the box. In an age of permanent unrelenting change, the pressure on executives and their employees to deal efficiently with paradoxes that are part of business structure has increased. Moreover, in the new wave of technology whereby the worldwide web technology and new web designs creatively enhance information sharing, collaboration, and functionality on the web, leadership is a paramount task. As such, in many cases, leaders are team players. Agile organizational structures and ubiquitous technology opened strategic doors to the dynamic unpredictable competition in a new diversified virtual marketplace. The rise of globalization and the need for organizations to be more efficient and competitive is driving a steady rise in the use of global virtual teams, spanning time-zones, national boundaries, and cultures.

Traditional firms have extended themselves by integrating a geographically extended network of individuals. Cyber-infrastructure, a network of skilled people, computers, information and databases are connected. Work is synthesized and knowledge is advanced through virtual teams, part of the circle of innovation, thriving in the global marketplace [1] [2]. Effectively leading and managing a virtual team is challenging, especially if virtual leaders emerge exploiting fast-changing opportunities which may require a different range of skills and resources than those in traditional organizations [3]. This research study is about the emergence of virtual business team leaders and its likelihood of success in the Middle East and North African Region.

2. LITERATURE REVIEW

Traditional business organizations of the past seem to have disappeared bringing with them uncertainty, ambiguity, and resistance to adapt. The opportunities for and need of virtual organizations has grown with the combination of increasing globalisation and widespread developments in information communication and technology (ICT) [4]. Leaders inside the rapidly changing environment see creative opportunity and generate survival strategies. For those who are flexible enough to adapt, opportunities for growth and development abound. Executives, as virtual business team leaders, look for methods and tools that can help them stay competitive; virtual business team leaders are able to reinvent themselves.

According to research conducted, two key factors in organizational effectiveness are leadership and teams whereby one of the most critical challenges is developing leaders with the requisite skills to succeed in the complex global work environment [5]. Even though current management literature still focuses on tactics to increase power and hoard it as a means to ensure a leadership position, the behaviours necessary to actually build contemporary individual power and collaboration in team based structures creates a different set of challenges [6]. Researchers note that leaders must develop a strong portfolio of technical, interpersonal, and conceptual skills appropriate for managing at times the most complex of all possible solutions [7]. (See Table One).

Table One: Place-Time Model of Interaction

Same Place	Different Place	
Same Time	Face-to-face	Wireless Connection Technologies; Telephone ; Videoconferencing
Different Time	Single text editing; Shift work	Wireless Connection Technologies; E-mail; Voice mail

The Place-Time Model of Interaction [8] might be thought of when considering issues teams have when working across different locations and times. Slightly modified to consider the impact of technology, the model helps to conceptualize teams in terms of geographic location (together vs. separated) and in terms of their temporal relationship (interacting in real time versus asynchronous) Communication and teamwork unfold differently face-to-face than they do via electronic media. Virtual business team leaders make a greater number of key decisions addressing critical performance challenges that are broad and narrow in scope, able to see the elephant and the genius in the boardroom and appropriately adapt [9] [10]. Firms with cutting-edge team-based structures have been built around proven leadership abilities, strong functional and managerial skills, and a good balance of product and services business experience [11] [12]. It has been found that business team leaders need practical applicable skills in terms of their role in a virtual workforce: how to prepare and develop the team; how to meet with the team, work together and engage it in the dynamics of problem solving and decision making; how to gain commitment by networking inside and outside

the team—employees, customers and suppliers; how to develop the team members synergistically by building trust to enhance one another by working either cooperatively or collaboratively; and lastly how to project an image of being a winner, a victorious team committed to making the firm a leader in delivering solutions [13]. In spite of the technological investment and provision of staff, it does not mean that the virtual team is functional, especially in developing countries as the Middle East and the North African Region (MENA). Studies have proved that team functional issues as disseminating and monitoring company mission, vision, objectives, task, procedure, policy, rules, and regulation may be difficult at a distance. It has been found that to do so, effective virtual business team leaders may need access to ample resources. As research has shown, such virtual leaders may use authority and power directed downward and/or laterally as in team problem-solving and decision-making to facilitate team performance [14] [15]. Research has shown that teams need leaders with skills and personalities that are different from traditional co-located teams; for instance, projecting presence (using open channels of communication) through media that does not have the subtleties of face-to-face facial expressions as a smile or a physical gesture of a slap on the back when the team leader is time zones and thousands of miles away. Online leaders deal with another factor, which may be the most difficult of all, maintaining trust online. Trust online based on a mutual understanding of one another's intentions and appreciation of others' wants and desires is difficult to achieve without face-to-face interaction [16]. Even though the teams are flexible in terms of setting objectives and achieving them, the virtual context itself might make it difficult for team members to actually coordinate or to influence each other wherein I hold that emergent leaders play a role. This research study seeks to determine (1) the conditions that exist prior to the emergence of virtual business team leaders and to determine (2) the impact of the emergent virtual business team leaders on team performance. Given the review drawn from the literature, the four hypotheses assess the relationship of the four variables contrasting the perception of newly established virtual team members without a leader to those with an emergent team leader with respect to: (1) team objective, (2) task procedure, (3) established communication channels, and (4) overlying trust in the team leader.

3. METHOD

This section covers the purpose of the study, the research questions, the participants, the procedures used in the study, the research design, rubrics, and analysis of data used. The purpose of this study is to determine (1) the conditions that exist prior to the emergence of virtual business team leaders and to determine (2) the impact of the emergent virtual business team leaders on team performance. The following hypotheses and research questions were developed:

- Hypothesis One: Newly established virtual business team members perceive significantly more ambiguity of team objective than do virtual teams with emergent leaders.
- Hypothesis Two: Newly established virtual business team members perceive significantly more ambiguity in procedure than do virtual teams with emergent leaders
- Hypothesis Three: Newly established virtual business team members perceive significantly poorer channels of communication than do virtual teams with emergent leaders
- Hypothesis Four: Newly established virtual business team members perceive significantly more of a need for trust in team leader than do virtual teams with emergent leaders
- Research Question One: Are team members led by an emerging virtual team leader more productive than team members not led by a virtual team leader at all?

3.1 Executive Level Participants and Procedure

Two business managers working in the local and regional marketplace are selected. The participants who work at executive level in multinational companies are asked if they would consent to be interviewed for a research study being conducted. Both leaders are female. Assured that confidentiality is to be maintained, a twenty-minute interview in which five open-ended questions are posed is conducted (See Appendix One).

3.2 Employee Level Participants and Procedure

The participants who attend one graduate level business courses at the faculty of business administration and economics are selected as participants. The sum total of students is 24: 17 are male; 7 are female; and 20 work in local, regional, or multinational companies. All participants attend the Fall Semester at a private English speaking university in the Middle East and North African Area (MENA). In this research design, the participants are assigned a graded team project across the Fall Semester. The participants are placed in virtual teams of four members. Each team is to work on tasks on the internet. The team project is to be developed by all the members of the team who are to meet regularly on the team blog in order to achieve their assigned team objective. The blogs are generated by the course leader who is the blog administrator. During the second week of a fifteen week semester, the participants are placed in formal teams and told to work together on a private team blog to complete a preparatory assignment. In order for the participants to become accustomed to work in teams, which is an important step for effective performance [17][18], the participants are to engage in preparatory teamwork to help the participants become comfortable with their team members and with the team objective. During the third week, the participants as virtual team members are told to submit the first graded task on the blog. They may or may not collaborate on the blog at times/places synchronously or asynchronously in order to complete the first graded task in the graded team project. If they choose to, the participants are told that they may personalize the team blog, adding IT features to enhance and facilitate online communication. During the fourth week, the participants are given the second task to complete whereby all team members must collaborate. In order to submit the task online, the participants need to work together. During the fifth week, the participants are to complete the third task. Again, all team participants may or may not collaborate. Nonetheless, the task must be submitted. During the sixth and seventh week of a fifteen week semester, the team participants have another collaborative task. All need to work together to complete the task. Again, the task must be submitted online. During the ninth and tenth week, the final task is to be completed. The team participants are to finalize the graded team project. It is to be submitted online. During the eleventh week, the teamwork survey is filled out in class. Finally, during fifteen week, all the participants are to fill out a survey.

The research is conducted as an experimental design with mixed method. Two main areas are probed—conditions that lead to the emergence of virtual business team leaders and comparative performance following the emergence of the leader. Rubrics were generated to measure each context. Data was analyzed using t-test and percentiles. The first rubric is paired with the Hypothesis One to evaluate the emergence of the virtual business team leader's on the Likert Scale (1 is non existence and 5 is fully integrated) with respect to participants' perception of the team objective whereas the second rubric is paired with Hypothesis Two to evaluate the emergence of the virtual business team leader's on the Likert Scale (1 is non existence and 5 is fully integrated) with respect to participants' perception of procedure. The third rubric is paired with the Hypothesis Three to evaluate the emergence of the virtual business team leader's on the Likert Scale (1 is non existence and 5 is fully integrated) with respect to participants' perception of communication channels as the fourth rubric is paired with Hypothesis Four to evaluate the emergence of the virtual business team leader's on the

Likert Scale (1 is non existence and 5 is fully permeated) with respect to participants' perception of trust.

4. DISCUSSION

Based on the data analyzed, the section below discusses the results of the analysis in line with the literature reviewed. Given that the purpose of this study is to determine (1) the conditions that exist prior to the emergence of virtual business team leaders and to determine (2) the impact of the emergent virtual business team leaders on team performance, two main areas were probed. The study found that prior to the emergence of virtual business team leaders at least four conditions seem to exist: ambiguity of team objective and task procedure, unclear channels of communication, and lack of trust. Emergent leaders seem to generate structure: emergent leader generate a context in which team members now perceive clarity of project objective ($t=0.0294$, $p<0.05$) and of procedure ($t= 0.0223$, $p<0.05$); in addition, team members also perceive clear channels of communication ($t= 0.046$, $p<0.05$); finally, team members seem to perceive an implicit yet visible sense of trust in the virtual team leader ($t= 0.047$, $p<0.05$). When an emergent leader arises in such a newly established virtual business team, team members seem to be more productive (85% versus 0%; 65% versus 0 %). Based on the results, Hypothesis One was true. Newly established virtual business team members perceive significantly more ambiguity of team objective than do virtual teams with emergent leaders. Team members needed to know exactly what needed to be achieved (team objective). Without an individual to facilitate team perception, there seemed to be a stall mark. In three of the teams, a leader emerged. This emergent leader was able to clarify their goal. Research studies have shown that in a leaderless autonomous work team context if individuals reflect a high motivation to lead as well as actively engage in leadership behavior, their motivation and leadership style would differentiate them from others and have them recognized as leaders [19]. Moreover, based on the results, Hypothesis Two was true. Newly established virtual business team members perceive significantly more ambiguity in procedure than do virtual teams with emergent leaders. It is held that virtual business team leaders emerge because the specific products that the team ought to build may not be ready in the finite time allocated [20]. Virtual business team members needed to know exactly what steps to take (procedure) in order to arrive at the team goals. The emergent leader clarified the path. The importance of context and connections holds true in the MENA as was also found by other researchers elsewhere in the region [21]. Leaders figured out how to connect the dots as was heralded at the Wharton Business in 2006 [22] and was experienced in the MENA. Moreover, based on the results, it was found that Hypothesis Three was true. Newly established virtual business team members perceive significantly poorer channels of communication than do virtual teams with emergent leaders. The emergent leader seemed to make herself/himself accessible, clarifying how members could interact with the leader and with other the team members--the particular channels of communication. On the ground, the emergent team leader seemed to be able to generate and bridge ties between members and to herself/ himself using supportive influence tactics and recognition. As in the literature reviewed, the emergent business team leaders made the effort to generate the informal social networks that shapes the leadership context and their role in delivering organizational goals [23]. Assertive tactics were not effective as was consistent with the literature reviewed but not with the two executives interviewed. The emergent leader needed to be there on the ground for her/his team, from time to time, to actually explain pragmatic issues face-to-face. The lack of nonverbal cues may have made it difficult to maintain her/his presence: The importance of context and connections holds true in the MENA as was also found by other researchers [24][25][26]. Emergent virtual business leader and her/his team worked collaboratively to reach the team objective when ideas are shaped by intelligent business team leaders networking, internally and

externally across time and space [27] [28] confronting, challenging, and coalescing knowing how to synergistically plan, organize, lead, and control. Furthermore, based on the results it was found that Hypothesis Four was true. Newly established virtual business team members perceive significantly more of a need for trust in team leader than do virtual teams with emergent leaders. Even though the participants were told whom to work with, what to accomplish, and how to interrelate on the web, at inception, the four teams rarely if ever networked. The results show that team members felt insecure and did not trust one another much without a team leader. Security and trust seem to have increased when the emergent leaders led the teams though it is not clear whether team members really identify and trust leadership with whom they only communicate online [29]. The emergent leader facilitated performance in a positive, functional manner; as such, effective team leadership engendered trust. Nonetheless, many members did not engage in efficient and effective performance online or did so too late. These results moreover are related to the material drawn from the interviews with the two female executives. It is interesting to note that assertive rather than instructive or collaborative techniques are consistent with practice inside MENA companies. The two senior level executives who were interviewed noted that their 25 year experience in the highly competitive MENA region required a highly controlled rigid bureaucratic structure. The executives noted, as did some of the participants who are employed locally, that virtual teams were integrated into both the local and regional context wherein assigned centralized virtual group leaders controlled transactions. Such groups were closely monitored to ensure results as is the case in other global companies[30][31]. The results drawn from Research Question One hold that team members led by an emerging team leader are more productive than team members not led by a virtual business team leader. One team was led by an emergent team leader week three versus another team that emerged week ten (85% vs. 0%). The results also showed that in the virtual business teams with a leader who emerges in the first half of the teams lifecycle outperforms other virtual business teams who adopt a leader in the second half of its life cycle (85% & 65 vs. 0%). Research has shown that early emergence of virtual leaders tends to lead to effective performance [32]. Furthermore, self-managed virtual teams that do exceptionally well are those who began to manage themselves in the first half of their life-span focusing on constructive “performance” and “monitoring” performance [33]. Research has similarly shown that leaders who emerge too late will not have enough time to reach targeted objectives successfully as was the case with team leader who emerged week six (0%). Adopting “the leader’s” job was a challenging one as some team members were unwilling and unable to accept an emergent leader or heed a leader’s directives when the leader emerged rather than was assigned by higher authority within the organizational hierarchy. Leadership did not clearly emerge at all in the remaining business team who decided to work face-to-face during week ten. It is held that “Without nonverbal tools, a sender/leader cannot easily alter the mood of a message, communicate a sense of individuality, or exercise dominance or charisma,” [34]. This study on emergent leadership has shown that virtual teams that perform well are managed by team leaders who emerge when the leader is not assigned. Stepping out of the box is a path taken by too few.

5. CONCLUSION, LIMITATIONS, AND RECOMMENDATION

The study found that uncertainty avoidance is an overriding issue in the MENA. Emerging virtual business team leaders seem to provide clarity: The results held that simple intelligible team goals and procedures, open communication channels and trust in emergent virtual business team leaders are significant. In the MENA, where the radical paradigm shift is taking place in the digital world, *everything does not seem to have its place* [35]. Competitive business teams seem to be adopting new behavior, changing the way they conduct transactions using computer applications to collaborate [36] [37]. Emerging business team leaders may be seen as the key to performance inside

the circle of innovation as they effectively adapt to perceived ambiguity in a complex context, the newly established virtual team [38]. However, the results point to multiple issues that need to be researched further. A number of limitations were found in the research conducted that may have stemmed from the sample selected. The sample was a convenience sample [39]. Second, given the absence of random sampling, the findings cannot be generalized: issues as similar perceptions stemming from nationality, culture, social economic status, field of specialization, and uneven gender distribution exist. The sample was composed of more males to females (70% Male) though the managers interviewed provided a female perspective. Third, an additional limitation was the sample's access to the internet as is not the case of all firms in the MENA. The lack of efficiency, speed, and intuitiveness of the digital services may be perceived as a major limitation as has been observed by other practitioner researchers [40]. Given the results and the impact of the limitations, the practitioner-researcher holds herself accountable for longitudinal research designed to confirm the findings and establish causality in the relationship studied. Moreover, she calls for change in practice and attitude in the Middle East and North African Area (MENA): calling for the need to encourage new management practices in teams that encourage "thinking outside the box," tackling uncertainty avoidance, a practice that is imperative in the third millennium.

REFERENCES

- [1] Zivick, J. 2012. Mapping global virtual team leadership actions to organizational roles. *The Business Review*. Cambridge, Maryland. 19(2), 18-25.
- [2] Peters, T. 1999. *The Circle of Innovation: You Can't Shrink Your Way to Greatness*. New York: Vintage Books.
- [3] Pazos, P., Canto, A. M. C., Magpili, N. C. 2012. *Proceedings of 2012 Industrial and Systems Engineering Research Conference*. G. Lim and J. W. Herrmann, Editors. *A Case Study of Key Factors Driving Global Virtual Team Effectiveness*
- [4] Dessler, G. 2015 in print. *Human Resource Management* (14e/Global Edition). Upper Saddle River, New Jersey: Pearson-Prentice Hall.
- [5] Voegtlin, C., Patzer, M., & Scherer, A. G. 2011. Responsible leadership in global business: A new approach to leadership and its multi-level outcomes. *Journal of Business Ethics*. 105, 1-16.
- [6] White, J. R. 2007. Identifying required skills for virtual team leaders: a Delphi method study. Dissertation. School of Business. University of Phoenix.
- [7] Maznevski, M. & DiStefano, J. J. 2000. Global leaders are team players: developing global leaders through membership on global teams. *Human Resource Management*. 39(2/3), 195-208.
- [8] Thompson, L. L. 2001. *The Mind and Heart of the Negotiator*. 2nd Edition. Upper Saddle River, New Jersey: Prentice Hall.
- [9] Shriberg, A. 2009. Effectively Leading and Managing a Virtual Team. *The Business Review*. 12(2), 1-2.
- [10] Heifetz, R., Grashow, A., & Linsky, M. 2010. *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*. Boston, Massachusetts: Cambridge Leadership Associates.
- [11] Robbins, S. P. & Judge, T. 2015 in print. *Organizational Behavior*. 15th Edition. Upper Saddle River, New Jersey: Pearson.
- [12] Mullins, L. L. (2008). *Essentials of Organizational Behavior*. 2nd Edition. Upper Saddle River New Jersey: Financial Times Prentice Hall.

- [13] Shriberg, A. 2009. Effectively Leading and Managing a Virtual Team. *The Business Review*. 12(2), 1-2.
- [14] Zegers, I. 2003. Leadership in virtual teams: Oxymoron or opportunity? *Organizational Dynamics*. 3(4), 339-351.
- [15] Kayworth, T. R. & Leidner, D. E. 2001. Leadership effectiveness in global virtual teams. *Journal of Management Information Systems*. 18(3), 7-40. 38.
- [16] Bass, B. M & Bass, R. (2008). *The Bass Handbook of Leadership: Theory, Research, and Managerial Applications*. New York: Free Press.
- [17] Newby, T.J., Stepich, D. A., Lehman, J. D., & Russell, J. D. 2006. *Educational Technology for Teaching and Learning*. Upper Saddle River, New Jersey: Pearson.
- [18] Bates, A. W. 2005. *Technology, E-Learning and Distance Education*. 2nd Edition. Routledge: London.
- [19] Oh, Se-Hyung (David). 2012. Leadership emergence in autonomous work teams: Who is more willing to lead. *Social Behavior and Personality*. 40(9), 1451-146415.
- [20] Chen, C. C., Wu, J., Yang, S. C., & Tsou, H. 2008. Importance of diversified leadership roles in improving team effectiveness in a virtual collaboration learning environment. *Educational Technology and Society*. 11(1), 304-321.
- [21] Randeree, K. & Ninan, M. 2011. Leadership and teams in business: a study of IT projects in the United Arab Emirates. *International Journal of Managing Projects in Business*. 4(11), 28-48.
- [22] Hall, T. & Janman, K. 2010. *The Leadership Illusion: The Importance of Context and Connections*. London, United Kingdom: Palgrave Macmillan.
- [23] Friedman, S. 2008. *Total Leadership: Be a Better Leader, Have a Richer Life*. Boston, Massachusetts: Harvard Business Press.
- [24] Daniels, J. D., Radebaugh, L. H., & Sullivan, D. P. 2013. *International Business: Environments and Operations*. 14e/Global.
- [25] Akhras, C. 2012. Interactive technology: Enhancing business students' content literacy. www.elsevier.com; www.sciencedigest.com.
- [26] Gardner, H. 2002. *On Leadership*. New York: The Free Press.
- [27] Keohane, N. O. 2010. *Thinking about Leadership*. Princeton, New Jersey: Princeton University Press.
- [28] Carte, T. A., Chidambaram, L. & Becker, A. 2006. Emergent leadership in self-managed virtual teams: A longitudinal study of concentrated and shared leadership behaviours. *Group Decision and Negotiation*. 15, 323-343.
- [29] Shamir, B. 1999. Leadership in boundaryless organizations: Disposable or indispensable. *European Journal of Work and Organizational Psychology*. 8 (10, 49-71).
- [30] Glucker, J. & Schrott, G. 2007. Leadership and Performance in Virtual Teams: Exploring brokerage in electronic communication. *International Journal of e-Collaboration*. 3(3), 31-52.
- [31] Clutterbuck, D. 2004. The challenges of the virtual team. *Training Journal*. 24, 1-6.
- [32] Coyle, J. & Schnarr, N. 1995. The soft-side challenges of the virtual corporation. *Human Resource Planning*. 18(1), 41-42.
- [33] Nicholson, D. B., Sarker, S., Sarker, S., & Valacich, J. S. 2007. Determinants of effective leadership in information systems development teams: An exploratory study of face-to-face and virtual contexts. *Journal of Information Technology Theory and Application*. 8(4), 39-56.
- [34] Wickham, K. R. & Walther, J. B. 2007. Perceived behaviour of emergent and assigned leaders in virtual groups. *International Journal of e-Collaboration*. 3(1), 1-17.

- [35] Kiesler, S. 1986. The hidden message in computer networks. *Harvard Business Review*. 46-54, 58-60.
- [36] Weinberger, D. 2007. *Everything is Miscellaneous: The Power of the New Digital Disorder*. New York: Holt Paperback.
- [37] Kasprzak, L. (2012). Using cloud tools to collaborate. *Progress*. 108(7), 41-44.
- [38] Hong, J., Yu, K., & Chen, M. 2010. Collaborative learning in technological project design. *International Journal of Technological Design Education*. 21. 335-347.
- [39] Ferrell, O. C. Hirt, G. A. Ferrell. L. 2012. *Business: A Changing World*. 8th edition. McGraw Hill
- [40] Fraenkel, J. R. & Wallen, A. 2006. *How To Design and Evaluate Research in Education*. 6th ed. Boston: McGraw Hill.
- [41] Jenkins, H. 2006. *Confronting the challenges of participatory culture: Education for the 21st century*. The John D. And Catherine T. Mac Arthur Foundation. Retrieved August 28, 2012. <http://digitalllearning.macfound.org>.
- [42] Warwer. O, Onesimus, Djumilah, Armanu and Mintarti, “*Intrinsic and Extrinsic Motivation Mediate Self-Leadership Focused Behavioral Strategies and Performance Outcome*”, *International Journal of Management (IJM)*, Volume 4, Issue 5, 2013, pp. 191 - 203, ISSN Print: 0976-6502, ISSN Online: 0976-6510.
- [43] Dr. Jayshree Suresh and Kavitha Sethuraman, “*Effective Leadership*”, *International Journal of Management (IJM)*, Volume 4, Issue 2, 2013, pp. 44 - 47, ISSN Print: 0976-6502, ISSN Online: 0976-6510.