Examining Emotional Intelligence Influence on Higher Education Students' Motivation, Engagement and Collaborative Working

Mohammad Masud
mohdmasud07@yahoo.co.uk

Abstract

This research aims to review how emotional intelligence influenced engagement, motivation and collaborative working of higher education students.. The research methodology adopted for this research is secondary research wherein information was gathered from secondary sources. In order to find the required literature for this research, an extensive search of online databases was conducted. There were over 150 articles used to review the literature. The Goleman's framework (five key elements: self- awareness, self-regulation, social awareness, motivation and empathy) has used to guide the review. The findings from the current review tend to widen our understanding about the link between EI and varied academic outcomes in significant ways.

Key words: Emotional intelligence, engagement, motivation, collaborative working, personality, intellectual capabilities

INTRODUCTION

As a concept, emotional intelligence (EI) has gained much popularity among scholars, general public and practitioners. It has been acknowledged that social and emotional competence is of equal significance as conventional dimensions of personality and intellectual capabilities. As per the definition of EI, it is the capability to find, manage and understand an individual's or other individuals' emotions (Ye & Ha, 2020). The human body comprises of a limbic system which is the root of emotions. While it is distinct from logical brain, both the limbic system and logical brain are inter-linked and grow together. This implies that an individual's capability to reason and feelings need to be utilized in a concurrent manner (Rayees, 2021). In the case of young learners, EI is of much significance, considering that they are leaders of their own, by driving either failure or success in terms of acquiring a degree. Learners or students need to be aware that motivation for success should lie within them, as the demands and stress levels are integral to achieving success in education (Jaleel & Ghoti R. M, 2021). The purpose of this paper is to investigate the influence of emotional intelligence on the motivation, engagement and collaborative working on higher education students.

Aims and Objectives

Research Aim

There is adequate evidence which proved that emotional intelligence would be beneficial for students for excelling during the various phases of life, right form school to college, and later into a professional life (Arias et al., 2022). At the level of higher education (or college), EI has been proven to be a vital skill that enables students to cope and manage the rigours of education. Several studies conducted in the past has highlighted the positive link between the emotional intelligence of students and a superior level of academic achievement, wherein it has been indicated that students with high EI have higher levels of interpersonal and intrapersonal skills, are open to adapt and display enhance capabilities in stress-management (Ana, 2021).

The aim of this research is to review how emotional intelligence influenced engagement, motivation and collaborative working of higher education students. In order to drive this research further, the following research objectives have been framed.

Research Objectives

•   To review how emotional intelligence influenced engagement among higher education students.

•   To evaluate how emotional intelligence influenced motivation and collaborative working of higher education students.

•   To offer recommendations as to reviewing EI from a broader perspective.

LITERATURE REVIEW

Contextual Background

Understanding and Measuring Emotional Intelligence (EI)

Right from the time the notion of EI was introduced by Mayer and Salovey (1997), EI has emerged as a popular research domain, while sparking deliberations across many academic spheres. The massive interest of the domain of education in EI adheres to a humungous body of evidence that indicates the potential of the concept while elucidating variance within significant academic results. As per existing evidence, it has been indicated that EI has a significant role to play in predicting the capability of an individual to effectively manage the pressing needs within academics. For example, as per investigations it has been recognized that students with high level of EI tend to frequently have higher scores (Perera & DiGiacomo, 2013), and have more scope to be retained and persist till such time that they complete their degree, as compared to peers with poor levels of EI (Snowden et al., 2018). Students with high EI also tend to utilize increases strategies of adaptive coping when faced with challenges and experience scant negative academic emotions (Thomas et al., 2017).

Though the above said theoretical orientations does have some merit from an intellectual point of view, while widening peoples' understanding about emotional competencies in significant ways, the ability model of EI has been endorsed by Mayer and Salovey (1997). It can be understood that the 'ability' based theoretical orientation could have a substantial practical utility for educators, practitioners of education who are keen to build interventions with a key objective of improving the emotional intelligence of learners or students. As it has been explained above, the 'ability' model perceives individuals with EI as those who are in possession of skills required to effectively process information that is emotionally loaded, while managing the linked affective reactions. As such, a theoretical orientation might prove to be valuable to educators, which would allude to EI as competencies that could be imparted to students and enhanced through practice driven by due guidance.

Mixed EI model, Goleman (1995)

Until Thanks, Daniel Goleman, worldwide recognized a psychologist and regular contributors scientific articles to The New York Times, and the wide public learns about a valuable skill that each of us possesses.

Goleman's (1997) mixed model outlines five aspects the emotional intelligence:

1.   Self-awareness.
2.   Self-regulation;
3.   Self-motivation.
4.   Empathy;
5.   Social skills.

Self-awareness is understood like the ability identify the emotion and recognize its impact at engaging internal feelings leaders to decide. Just it recognising feelings or the meaning of an emotion is key in understanding what our mind is trying to tell us. "If we're not able to realize ours really feelings we are towards them defenseless." (Goleman, 1997, p.50) . People, who navigate their inner feelings very well, succeed in their lives easier and better decisions. They trust their instincts and can recognize the really important things in life decisions, like for example: with whom spend residue of life or what kind you choose employment. (Goleman, 1997)

The second aspect is self-regulation, involving the control of our emotions and impulses, thanks to which with we can better adapt changing conditions and circumstances.. People who with they leave control own emotions, see very often face oppressive feelings and no heavy settling with life failures. Opposite to those people, who this ability they develop, they can from life's misfortunes and disappointment to recover much faster and learn from mistakes. In addition, this skill also helps to build our credibility, which how terms of cooperation and working life, so in the life private, to creating strong relationships. (Goleman, 1997)

The ability to motivate oneself propels us forward, helps long-term concentration and achieves goals, which we are you are laid out. Self-motivation also very closely is related to passion and enthusiasm for the given thing and when reaching the state of flow enables excellent performance. IN not the last row with ability self-motivation signs on our access to life and overall tuning like Yippee vital optimism. Those who don't get scared at first view heavy   tasks and are willing to look for new ways, they overcome them much easier than those who are used to the whole life just succumb to the bar and don't move options further than the example.A very important component is also empathy or social awareness, which lies in the ability to perceive, understand and react to the emotions of others while trying to understand the social ties around myself.

The fifth aspect of this model is represented by social skills, where art plays a major role in interpersonal relationships. These skills are broad in scope and essentially combine the first four aspects of the model: the ability to empathize with the feelings of others, understanding how to act things and people in my surroundings and how to deal with after skills to be a good friend, a team player or team leader who can act fairly and openly. Besides that, perfectly polished communication skills including conflict resolution, persuasion, but also active listening, play a significant in our lives role. Good communicators can ably and constructively rate, wisely delegate and Yippee for No relatively easy convince second, never not by coercion or manipulation, but by suitable arguments and an open approach. (Goleman, 1997)

Criticisms on Emotional Intelligence

Irrespective of the popularity that EI has acquired, EI has also received much criticism. There have been critics who have argued that the extensive range of elements within the term emotional intelligence adds complexity to defining it clearly and to arrive at an agreement on what it was really. Discussion regarding whether EI was a trait or a skill also creates confusion among researchers, which results in several versions of performance tests and self-respect questionnaires with innumerable outcomes that would be in conflict with one another (Waterhouse, 2006; Perez et al., 2005). At the same time, there were others who were of the opinion that tests in EI might not be valid as EI was intricately linked with personality and intelligence (Robbins & Judge, 2009), and it has been argued by them that there was not ample evidence on the validity of content of such tools owing to a lack of a robust theoretical development and vagueness within content over

EI measures (Conte, 2005). As a response to such criticisms, it has been asserted by Cherniss et al. (2006), that the existence of varied versions during its initial developmental phases needs to be considered necessary instead of a weakness, while adding that there was evidence indicating that EI was as a matter of fact, was different from IQ, personality or other similar constructs.

Effectiveness of Emotional Intelligence

Research has supported the hypotheses pertaining to positive impacts from EI. The impact of group EI on effectiveness of team within healthcare workers was investigated by Lee and Wong (2019). The findings from their study indicated that the two sub-dimesions of EI scale viz., group social skills and group self-management, positively impacted effectiveness of team. Their study also found that the positive attitude of members such as being respectful and adding positive energy to group dynamics facilitated systematic working amongst group members. Whereas, social skills of the group tended to develop compatibility within group members and thus reduced incompatibility, tension and discrepancies. As per other research, it has been found that within teams that are self-managed, effectiveness in team work and EI had a positive correlation (Khan et al., 2014). The link between EI of team members and their skills in terms of resolving conflicts was examined by Vashisht et al., (2018). They found a positive impact on the performance of individual team members and team outcomes. It was also found that people who had a high level of EI gained benefits from collaborative techniques for conflict resolution, owing to an increased awareness level about their own emotions and openness to listen to others. This was beneficial in keeping teams on track while being focused on their goals.

In view of the findings presented through the studies above mentioned, it can be said that team members with EI could be expected to be highly satisfied as to the work that was developed by their team. Whether or not this was the case always, was investigated through recent research. It has been found through a study conducted by Kant (2019), undergraduate business students having high scores in EI were in fact not very satisfied with some aspects of team work. One reason that was cited for this dissatisfaction was that people were often hypersensitive owing to their continuous awareness about the feelings of their other team members. This led to depression and thus lowered the overall effectiveness of their teamwork.

Emotional Intelligence and Student Engagement

In the domain of education, student engagement would pertain to the volume of care, awareness, desire, curiosity and positivity that learners project at the time of acquiring knowledge, which spreads to the level of inspiration they need to acquire and develop during the course of their education. Students who are known to possess a greater degress of hopefulness, flexibility, efficacy and confidence would project a higher level of engagement (Luthans et al., 2016). Three dimensions for expressing the engagement of students were developed by Fredricks et al.,(2004). These dimensions refer to behavioural engagement which indicates a positive compliance on the part of students. Second would the emotional involvement that students are known to experience like enjoyment, attention or a sense of belonging. Lastly, cognitive engagement through learning, that often extends beyond the requirements and deriving pleasure from challenges.

It has been suggested through extensive literature that emotions could either have mal-adaptive or adaptive impact on engagement, learning, and overall student achievement (Tyng et al., 2017). Several studies have indicated that positive emotions are positively linked with engagement, performance and persistence (Denovan et al., 2020; Hayat et al., 2020). In contrast, negative emotions are linked with lowered performance in learning and disengagement Parkinson and

McBain (2013). Though certain negative emotions such as anxiety would also tend to have adaptive impacts on improving an individual's extrinsic motivation to circumvent failure, such negative emotions could negatively impact the attention of learners and their cognitive functioning, thus negatively making an impact on their level of engagement and outcomes in learning.

Emotional Intelligence and Student Motivation

Self-motivation has been argued as one of the key competencies within EI (Goleman, 1995b). This view comprises of motivation as the main factor in EI. There are other researchers who state that motivation is only associated with EI and is not a main factor of it Bacon and Corr (2017). The study carried out by Christie et al., (2007), examined the association between the conceptualization of EI and the theory of motivation (motivational requirements of power, achievement and affiliation). The findings indicated that there was only a co-variation of motivation with EI but it did not constitute a sub-component of EI. This was in contradiction by the concept presented by Goleman (1995a), wherein it is indicated that personal drive was a subset of EI and motivation. The said studies pave the way for additional research to affirm the association between the two constructs by utilizing varied motivation measures such as self-determination perspective or the goal-attainment model, and other self-reporting measures of EI. As of now motivation in terms of performance of task leads the way as a variable that has been extensively researched from a student perspective (García et al., 2015; Usán Supervía. & Salavera Bordás, 2018; Barreto Trujillo & Alvarez Bermúdez, 2019).

Research Gap

On the basis of the literature review conducted, it has clearly emerged that there are certain gaps in existing research which needs to be tackled. Though there are several studies on emotional intelligence from an academic context, such as the study conducted by Ebinagbome and Nizam (2016) to investigate the impact of emotional intelligence on academic performance of students, another study conducted by Mohzan et al., (2013), that examined the influence of emotional intelligence on academic achievement, or the study executed by Chang and Tsai (2022), to explore how university student's emotional intelligence, learning motivation and self-efficacy impacted academic achievement. Similarly, another study by Hadiwijaya and Hutasoit (2016), has examined the effect of emotional intelligence and motivation on student achievement, while the study carried out by Zhoc et al., (2020), examined the success and engagement levels of emotionally intelligent students, and a study was conducted by Deveci (2015), to investigate how emotional intelligence impacted teamwork among students. On the basis of the review, it was determined that while there were several studies that investigated the impact of emotional intelligence on student motivation, engagement and collaborative working (teamwork), these studies have examined the relation between emotional intelligence, motivation, engagement and collaborative working, individually. None of the studies so far have examined these aspects collectively in a single research. This is the gap that has emerged and an attempt is being made through this research to bridge this gap.

METHODOLOGY

Research Philosophy

The philosophy of research would refer to beliefs associated with the nature of reality that is under investigation (Bryman, 2016). The philosophy of research refers to the underlying definition of the nature of knowledge. For this research, an interpretivist research philosophy has been used as this research tends to derive findings from secondary data that is already in existence.

Data Collection Techniques

As mentioned, the research methodology adopted for this research is secondary research wherein information was gathered from secondary sources. In order to find the required literature for this research, an extensive search of online databases was conducted. The databases included; Taylor and Francis, ProQuest, ScienceDirect, Emerald Insight and American Psychological Association (APA).

Simply said, data that is collected through secondary sources is not something that has been acquired directly by a researcher. Secondary data would comprise of data that has been collected previously through research carried out by other researchers. The findings from other studies would be analyzed and assessed to interpret new findings.

Ethical Considerations

In the case of this research, data collection has been carried out from secondary sources where findings from previous researches have been used to develop this research. The findings derived from previous research have been reported through this research. To ensure ethics, all findings from previous studies were duly acknowledged through proper referencing and citations.

DISCUSSION AND RESULTS

Emotional Intelligence and Student Engagement

This present review has been carried out with three key objectives. At the outset, the intention was to replicate work that has been conducted in the past which hinted that emotional intelligence enables engagement amongst students within a higher education context. At par with

research conducted in the past, the findings from this present research revealed that EI was intricately associated with the affective elements of engagement to such an effect that students having high level of EI have more scope to experience activating achievement emotions such as; enjoyment, interest and enthusiasm (Maguire et al., 2017). At the same time, there is less scope for them to experience deactivating achievement emotions (such as; anxiety, boredom, frustration). Such findings are instrumental in making contributions to an increasing body of literature which brings to the fore the positive linkages among EI and academic success, which could in part be attributed to the impact of the construct of EI on affective engagement.

In addition, the findings from the current review tend to widen our understanding about the link between EI and varied academic outcomes in significant ways. As per this current review, it has emerged that EI directly influenced facets of behavioural engagement to an extent that students having a high level of EI had increased scope to project augmented engagement in terms of behaviour (undertaking increased efforts to educational activities, augmented level of persistence etc.) and reduction in behavioural disengagement (behaviour of withdrawal, unpreparedness etc.). The review of extant literature draws attention to the fact that a large number of investigations pertaining to the link between EI and student engagement have concentrated more on affective as well as cognitive elements of engagement, while overlooking the possible contribution of EI to behavioural facets of academic engagement.

From this, it can be believed that it is vital to examine the influence of EI on every domain of engagement considering that the current literature only emphasizes on varied causal pathways among components of engagement and academic achievement. Presenting it differently, it has been indicated through research that components of engagement drove success in academics using different mechanisms. For example, it has been indicated through research that behavioural engagement tends to make a rather direct impact on academic performance as it influences proximal outcomes that is intricately associated with short and long-term success, while affective engagement tends to make an indirect impact on performance. This is due to the fact that it influences outcomes that are distal, which influences performance through other procedures that act as mediators (Barragán Martín et al., 2021). What is of much significance is that research has

revealed that greater levels of one form of engagement are not adequate to ensure success in academics. Thus, EI might improve academic performance by enabling several types of engagement that applied a joint influence on academic success through various causal pathways.

Emotional Intelligence and Student Motivation

The findings from this review revealed substantial associations between EI and motivation. This finding offers new dimensions among Goleman's (Goleman, 1995a) model of EI and Deci and Ryan's (Ryan & Deci, 2000) self-determination view of motivation. Students are able to comprehend their own individual feelings (having knowledge about their own emotion) have high scope to have intrinsic motivation. They are aware about controlling their emotions with regards to learning, while moving towards achieving their goals. Other than that, students who are aware about managing emotions are capable of tackling anxiety and confront uncertainties in life. This enables students to gain information about what they like but not through external sources such as praises and rewards (Goleman, 1995a). Another domain pertaining to the model presented by Goleman (1995a), which is self-motivation, had a significant association with every other domain of intrinsic motivation. Students known to have this quality tend to be productive, are able to control their emotional impulses. They are also able to effectively manage emotions with a view to realize their goals of mastery and self-motivation. Furthermore, students who are in a position to organize their emotions would gain knowledge about accomplishment and self-interest, which is vital to realize self-goals (Tempelaar et al., 2012).

Findings from a study conducted by Trigueros et al., (2019), revealed that positive emotions were instrumental in positively predicting self-motivation towards physical education classes. Nonetheless, it also indicated that negative emotions negatively predicted self-motivation. This latter was not found to be statistically significant, other than a Pearson's correlation analysis. It is not easy to compare such results with those findings derived through other studies as research related to emotions within the sphere of education is comparatively in a state of fragmentation (Pekrun & Linnenbrink-Garcia, 2012). For instance, the study conducted by Mega et al., (2014), revealed that influence of positive emotions among students tend to enhance their confidence in

their individual capabilities, augments their intrinsic motivations to learn, and also their intention to execute specific actions.

Emotional Intelligence and Collaborative Working

The findings from a study by Deveci (2015), lends credence to the theory that there is a link between EI and collaborative skills. In view of the theoretical support within that study and the moderating impact size from correlation tests, it could be concluded that a substantial amount of collaborative skills need perception of emotions and self-regulation. Similar findings pertaining to EI and collaboration are evidence through extant literature. A study that was conducted in recent times by Hojat et al., (2015) amongst medical students reaffirmed an overlap between collaboration and empathy. Though the study conducted by Hojat et al., (2015), focused on an approach to integrated care, common denominators were identified by the authors in terms of interpersonal skills and comprehending the skills of other individuals within an environment of integrated care, collaboration and empathy. To say the least, when collaborative skills are interpersonal in nature, like communication skills, there is scope for individuals to be increasingly sensitive to an individual's emotional intelligence levels. Definitely, there is a need for it to be empirically validated. An affirmation as to EI is linked with collaborative skills is in itself a significant finding as it warrant the need for inter-professional education training beyond an approach which concentrates on prescriptive and technical coordination strategies like structured communication techniques. Interpersonal interactions and empathy are not topics that are traditional within most undergraduate programs. Such findings necessitate additional investigation and curriculum design changes and teaching methodologies, to tackle this gap.

However, finding a substantial link between EI and collaboration would not imply that people who have high scores in EI or empathy tests would be highly collaborative. This is mainly due to collaborative competencies need knowledge integration, values, skills and attitude (Cox & Cole, 2016), and EI on its own would not be sufficient.

RECOMMENDATIONS

Since this research followed a review methodology where only secondary data was used, which involved reviewing research conducted in the past and interpreting the findings to achieve the objectives of this research, there is no scope to generalize the findings from this research. Therefore, one of the foremost recommendations here would be to conduct a proper research using a quantitative methodology which would comprise of using actual respondents and primary data. This would mean that a sample population has to be identified so that they can be included for the research. When a small sample is chosen from the overall population, the findings derived from the data collected through this sample could be applied to the larger population and thus generalizing the findings from the research. Therefore, it is recommended that future study be carried out quantitatively to derive more generalizable and valid results.

CONCLUSION

it can be effectively concluded that EI could be instrumental in providing new information while facilitating the development and enhancement of pedagogical theoretical models. From this perspective, an intervention in terms of the factors of EI within the domain of education has become much needed. The association among EI and collaboration indicated that collaborative work makes a positive contribution towards increasing the construct by developing social skills within students who are reinforced in a positive manner. Similarly, applying the advantages from a cooperative strategy would enable students to gain skills for being collaborative while improving their educational perspectives within school, facilitate decision-making, task bifurcation, assume critical position, produce coordination during collaborative work, resolve conflicts and develop independence and extensive training of students.

.

REFERENCES

Akpoghomeh, O.S (1999). The Development of Air Transportation in Nigeria Journal of Transport Geography 33-43(2)

Akpoghomeh (1999) and Adenji (2000) Airiline Service in Nigeria: An Empirical Analysis International business management,5(4):218-222

Barros, C. P., Wanke, P. F., Nwaogbe, O, R. & Azad, A.K. (2017). Efficiency in   Nigerian Airports, Case Studies in Transport Policy 5 (4), 573-579. Elsevier (Science   Direct) https://doi.org/10.1016/j.cstp.2017.10.003.

Belobaba, P. and Simpson, R. (1982) 'Air transportation economics'. Working Paper, Flight Transportation Laboratory, Massachusetts Institute of Technology, Cambridge, MA.

Belobaba, P. (2009) 'Overview of airline economics, markets and demand', In: Belobaba, P., Odoni, A. and Barnhart, C. (eds.), The Global Airline Industry, 47-72, West Sussex: Wiley.

Bratu, S., & Barnhart, C. (2005). An analysis of passenger delays using flight operations and passenger booking data. Air Traffic Control Quarterly, 13 (1), 1-27.

Branko .B & Daduna .J (2011). Airport capacity and demand calculations by simulations. NETNOMICS: Economics Research and Electronic Networking volume 12, (3), 161-181

Burghouwt et al, (2017). The impact of airport capacity constraints on airfares.

   SEO-report nr.2017-04

Flint .P. (2000). Back on schedule Air Transport world. Journal of air transport management world 47-51

Januszewski, S. (2002). The effect of air traffic delays on airline prices'. Working Paper, Department of Economics, Massachusetts Institute of Technology, and Cambridge MA.

Kumar, V., & Sherry, L. (2009, May). Airport troughput capacity limits for demand management planning. In Integrated Communications, Navigation and Surveillance Conference, 2009. ICNS'09. 1-10. IEEE.

Leucci, G. (2016). Infrastructure development/investment (why airports invest). Journal of Airport Management, 10 (3), 266-272.

Leoan le et al (2010) optimum airport capacity under congestion, Journal of transportation planning under congestion 31, 93-113,

Mobolaji & Wilfred. (2011). Airport capacity utilization in Nigeria: A performance and efficiency analysis. African Journal of Business Management 5 (27), 11104-11115. Retrieved from http://www.academicjournals.org/AJBM.

Nwaogbe, O. R., Ukaegbu, S. I., & Ibe, C. T. (2013). The quality of Mass Transit service in Abuja, Nigeria: An analysis of customers' opinions. International Journal of Scientific & Technology Research, 2(12), 1-12.

Nwaogbe, O, R., Wokili, H., Omoke, V., Asiegbu, B. (2013). An Analysis of the impact of air transport sector to economic development in Nigeria. IOSR J. Bus. Manag. 14 (5), 41–48. Retrieved from http://dx.doi.org/10.9790/487X-1454148.

Nwaogbe, O, R., Pius, A., & Idoko, F.W. (2017). Estimating Nigeria Airport Production Function: Using Cobb Douglas Analytical Model. International Scientific Journal of Air Transport Industry (AERO-Journal), Ed. 2, 40-45, Zilinska University, Czech Republic.

Nwaogbe, O, R., Wanke, P.F., Barros, C. P., Azad, M.A.K., & Ogwude, I. C. (2017). Efficiency Drivers in Nigerian Airports: A Bootstrap DEA-Censored Quantile Regression Approach. Journal of Aviation Technology and Engineering. Purdue University, U.S.A. I Press.

Oyesiku. O. K., Somuyiwa. A.O., & Oduwole, A. (2016). Analysis of airport productivity and efficiency performance in Nigeria, European Journal of Business and Social Sciences, Vol. 4, (12), 147 – 168.

Pius, A., Nwaogbe, O. R., Opeoluwa, O., and I. Guenana. (2017) "An Investigation into the Effect of Airport Touting from the Passengers' Perspective: A Case of Nnamdi Azikiwe Airport Abuja". Transportation Research Procedia 28C (2017) pp. 69-78.

Pius, A., Nwaogbe, O. R., Akerele, O. U., & Masaku, S. (2017). An Appraisal of Airport Terminal Performance: Evidence from Murtala Muhammed International Airport (MMIA). International Journal of Professional Aviation Training & Testing Research9, (1).

Transportation Research Board, National Research council. (1989) Airport landside planning Techniques. National Research council Washington D.c 41-48

Vaze, V. and Barnhart, C. (2012) 'An assessment of the impact of demand management strategies for efficient allocation of airport capacity', Int. J. Revenue Management, 6, (3) 1/2, 5-27.

Wanke, P. F., Barros, C.P., & Nwaogbe, O, R. (2016). Assessing Productive Efficiency in Nigeria Airports using Fuzzy-DEA, Transport Policy, 49, 9-19. Elsevier (Science Direct).

Wanke, P. F., Nwaogbe, O, R., & Chen, Z. (2017). Efficiency in Nigerian Ports: Handling Imprecise Data with a Two-Stage Fuzzy Approach, Maritime Policy and Management (MPM), 44 (8) 1-17 https://doi.org/10.1080/03088839.2017.1410588.