Technology Acceptance and its Impact on Organizational Innovation with Staff Effectiveness

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ABSTRACT

This research is discussing the impact of organizational innovation with two of its dimensions in specific (Administrative & Technical) on staff effectiveness. In the beginning of the paper, it was challenging to choose how to measure the staff effectiveness variable but after further research it was decided to examine it by Performance and Satisfaction as it will be discussed further in the upcoming chapters.

The research also aims to test the impact of the moderating role of technology acceptance with its two dimensions (Perceived Ease of Use & Perceived Usefulness), and how it explains and affect the relationships proposed on each hypothesis.

Through spreading more than 500 questionnaires using online platforms the researcher was able to collect 387 successful data sample to reach the research results. The study findings have showed that there is positive relationship between organizational innovation and staff effectives.

While the in-depth analysis using ANOVA and R-square analysis showed that the moderating role of technology acceptance have enriched the relationship between the organizational innovation and Staff effectiveness.

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القابلية التكنولوجية و تأثيرها علي الابتكار التنظيمي مع فعالية الموظفين

ملخص

يناقش هذا البحث تأثير الابتكار التنظيمي بأبعاده المحددة (الإدارية والفنية) على فعالية الموظفين. في بداية البحث ، كان من الصعب اختيار كيفية قياس متغير فعالية الموظفين ولكن بعد إجراء مزيد من البحث ، تقرر فحصه من خلال الأداء والرضا للموظفين حيث سيتم مناقشته بشكل أكبر داخل البحث.

يهدف البحث أيضًا إلى اختبار تأثير الدور الوسيط للقابلية التكنولوجيا وبأبعادها (سهولة الاستخدام المتصورة والفائدة المتصورة) ، وكيف يفسر ويؤثر على العلاقات المقترحة في كل فرضية في البحث.

من خلال نشر أكثر من 500 استبيان باستخدام المنصات الإلكترونية ، تمكن الباحث من جمع 387 عينة بيانات ناجحة للوصول إلى نتائج البحث. أظهرت نتائج الدراسة أن هناك علاقة إيجابية بين الابتكار التنظيمي وفاعلية الموظفين كما هو مقترح في فراضيات البحث.

بينما أظهر التحليل المتعمق باستخدام تحليل ANOVA و R square أن تاثير الدور الوسيط للقابلية التكنولوجيا قد أثرى العلاقة بين الفعالية التنظيمية وفعالية الموظفين وقام بشرحها بشكل اكبر .

1.1.   <u>Research Overview:</u>

Innovation is one of the controversial topics in management studies and field for quite a while now, and we cannot mention innovation without speaking of technology. Technology itself made radical innovations in a lot of industries, but people conflict technological innovation with the technological industry itself as software and hardware.

Technology can have a lot of forms, types and techniques and technological innovation is just a single dimension of it, that's why a lot of studies have recommended the need of future and further studies to be done in innovation and its relation to technology to help managers and firms perform better.

This study takes innovation and technology into another aspect, which is how they impact the higher educational sector, by exploring how organizational innovation affect staff performance, specifically the academic staff effectiveness to perform their roles.

Testing the impact of technology acceptance on the direct relationship between organizational innovation - either administrative or technical – on academic staff effectiveness in higher education sector, showed a lot of gaps to be covered.

With the support of a lot of previous studies that marks the relevance and the importance of previously mentioned areas, this study aims to investigate the relationship between the three variables, whether it's positive or negative, and finding the routes and techniques that serves the best in higher educational sector.

1.2. <u>Research Importance:</u>

This research aims to examine the effect of organizational innovation on the employee's effectiveness. Also, to test the moderating effect of technological acceptance on their relationship in private universities in Egypt, this will be measured by considering the organizational innovation dimensions and how each of them might affect the employees in the organization while taking in consideration the result of technology in the situation hence, the whole organizational performance.

This study will investigate the reasons behind way innovation is becoming one of the essential reasons that affects employee's effectiveness at work and initiate in their organizational environment and if innovation has a direct positive effect on the employee's effectiveness.

1.3. <u>**Problem Statement:**</u>

According to several previous studies, investigation is needed for innovation in educational sector especially in universities because it affects both educational and industrial markets.

This study aims to fill the literature and practice gap of this area of research by building a better understanding of organizational innovation, as it is important in such dynamic environment nowadays to be able to cope with the fast-growing market around us.

In addition, that is why the anticipated outcome of this research focuses on choosing and finding the most convenient way to keep, train, and enhance the academic staff – since they are one of the key assets of any organization – in private universities.

1.4. Research Questions:
The following research questions needs to be addressed:

- How does organizational innovation affect staff's effectiveness in higher education sector**?**

- How does the presence of technology acceptance affect organizational innovation in higher education sector**?**

- Does employee effectiveness is affected by their technology acceptance in higher education sector**?**

- To what extent does organizational innovation's impact vary from one individual to another**?**

- Does the impact of organizational innovation on staff effectiveness differs in the presence of technology acceptance in private universities**?**

1.5. Research Objectives:
The aim of this research is:

- To develop a better understanding of organizational innovation and its dimensions in educational sector.

- To determine to what extent organizational innovation affects the employee's effectiveness in the higher education sector.

- To determine to what extent the role of technology acceptance affects the staff effectiveness in the higher education.

- To examine the impact of technology acceptance on organizational innovation and its relation with staff effectiveness in higher education sector.

- To examine to what extent technology acceptance presence would affect the organizational innovation in private universities.

1.6.   Research Hypothesis:
This study is working on 6 research Hypothesizes:

- **H1:** Administrative organizational innovation has a positive relationship with staff effectiveness.

- **H2:** Technical organizational innovation has a positive relationship with staff effectiveness.

- **H3:** Technological perceived ease of use moderates the relationship between administrative organizational innovation on staff effectiveness.

- **H4:** Technological perceived ease of use moderates the relationship between technical organizational innovation on staff effectiveness.

- **H5:** Technological perceived usefulness moderates the relationship between administrative organizational innovation on staff effectiveness.

- **H6:** Technological perceived usefulness moderates the relationship between technical organizational innovation on staff effectiveness.

1.7. **Research Conceptual Model:**
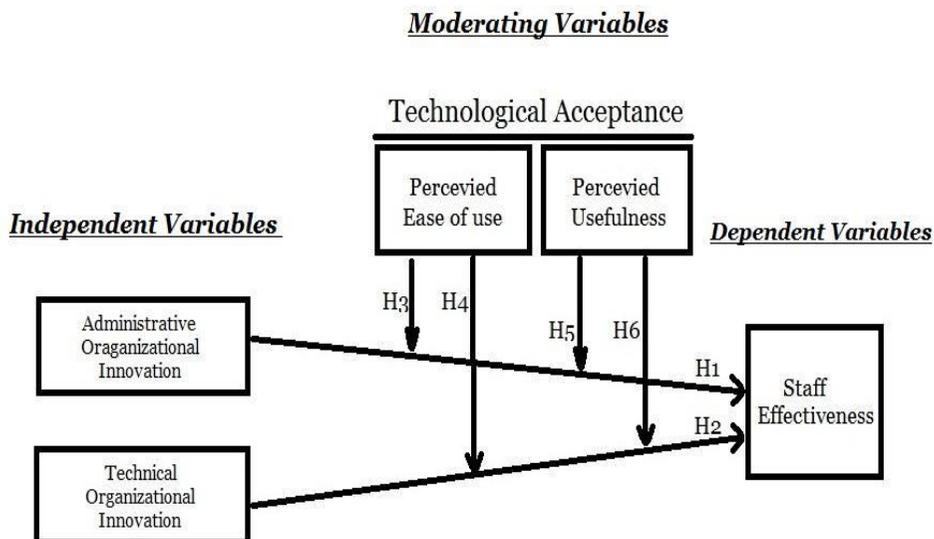
- *The model constructed by the researcher.*

2. **Previous Studies:**

2.1. *Organizational innovation*

(Mary M. Corossan and Marina Apaydin,2010) tackled innovation with all its dimensions while introducing a detailed anatomy for organizational innovation in specific.

This study introduced innovational dimension in a cube representation to better interpret the interrelation dimensions of innovation. This study states how innovation does not a have a single definition while introducing

the cube method and techniques to help adopt the right innovative solutions in different situations. (Christiane Prange, Bodo B. Schlegelmilch,2018)

While (Christian Horn, Alexander Brem, 2013) emphasizes on the importance of innovation in education sector especially in universities, as the view of innovation management is growing aggressively around the globe especially with the fast-growing pace of technology.

The study introduced the multidimensional complexity that needs to be taken in consideration while dealing with innovational techniques and tools, linking leadership aspects to innovation, while dividing it to process or outcome hence, how to deal with it in both cases. (Mary M. Corossan and Marina Apaydin,2010)

As innovation is a broad field, this study also suggests that managers in an innovative environment need to be flexible to whatever they might face, and take decisions according to each situation as the flow of innovative environments cannot be controlled. (Mary M. Corossan and Marina Apaydin,2010)

This article clearly states one of the major problems that faces firms about innovation researches, that most researches state the type of innovation after the implementation process, so they say what firms have used instead of guiding firms to use the right approach from the very beginning, (Christiane Prange, Bodo B. Schlegelmilch,2018)

One of the most important findings is that with the complexity of innovation's dimensions and interrelation, organizations might start with an innovational type and by time it might turn to another. For example, a number of incremental innovations with time might produce a radical innovation inside an entity. That's why further studies in this area is strongly recommended. (Mary M. Corossan and Marina Apaydin,2010)

The article accordingly agrees on the importance of organizational innovation and how innovation adds concrete efficiency through administrative and technical innovation plus new solutions. This verifies that innovation is a continuous process to develop the dynamic capability of any organization. (Christiane Prange, Bodo B. Schlegelmilch,2018).

Thus, universities nowadays need to highly concentrates and not to underestimates how could better understanding and implementation of organizational innovation could affect the performance of the whole organization. Hence, increasing faculties performances and the university's reputation and profits. (أسعد سليمان. (2020 & ,أبو سنيمة).

2.1.1 Administrative Organizational innovation

Through the years all innovation studies have been focusing only on technological innovations. Researchers cannot deny the fact that the technological industry has been viscously developing, but the administrative field also is entirely affected by innovation in all its aspects. This article is introducing a more cohesive view of innovation that supports the aim of this research. (Paula Anzola-Román, Cristina Bayona-Sáez, Teresa García-Marco,2018)

This study highlights the innovation practices that integrates the knowledge, resources and experiences of administrative experiences that replaces formal procedures and ideas to enhance the working process.
Additionally, the adoption of technological innovations is considered insufficient to keep competitiveness without the presence of strong organizational innovation to support either administrative or technical. (Paula Anzola-Román, Cristina Bayona-Sáez, Teresa García-Marco,2018)

(Paula Anzola-Román, Cristina Bayona-Sáez, Teresa García-Marco,2018) pointed out that administrative innovation plays a vital role in the innovation process of any firm, which means it directly enhances the flexibility and the creativity of the development of technological innovation, hence, affects the effectiveness of the staff members and their performance in the daily work routines.

Therefore, universities would benefit from implementing and strengthening the harmony of a wide set of practices so that it can optimizes the results from its own innovation processes, while contributing on the complement approach of organizational innovation and the exclusive contribution of the administrative innovation approach. (Paula Anzola-Román, Cristina Bayona-Sáez, Teresa García-Marco,2018)

In the end (Paula Anzola-Román, Cristina Bayona-Sáez, Teresa García-Marco,2018) research suggested that the implementation of administrative innovation and the engagement of firm's members offers some deep insights on how this relationship and activities helps making better profit for the whole organization, introducing organizational innovation is 'the introduction of a new organi- zational method in the business practices, the organization of the workplace or the external relations of the firm', Hence, previous solid literature sources supports that administrative innovation is recognized as a solid competitive advantage for transforming new ideas and business opportunities into success.

(Jonathan Chausset, Lorenz Mc Namara,2014) found that it's important to display and facilitates the tool in a way that show how easy for the staff to develop it and use it through workshops and educational manuals.

Also (Jonathan Chausset, Lorenz Mc Namara,2014) found that implementing the research outcomes might take a lot of time and effort in some areas because of the time limitations, therefore this study recommends patience and enough time to see better results of the implementation of the new approached introduced.

2.1.2   *Technical Organizational innovation*

Previous literature reviews have shown that organizational innovation as a pillar for technical innovation, because it would affect the outcomes of technical and social systems (Azar and Ciabuschi, 2017), While (Azar and Ciabuschi, 2017; Anzola-Román et al., 2018), sees innovation as a whole process depends on technical innovation and predicts its impact on the quality management of firm's processes.

Sciarelli, M., Gheith, M.H. and Tani, M. (2020) has made the most impactful results helping in the construction of this research foundation, as they already proposed concrete findings through Quality management processes to help university management become more innovative and have more in depth insights on how to use its resources in the most effective and efficient way to reach its optimal innovation and performance.

Also Sciarelli, M., Gheith, M.H. and Tani, M. (2020), has identified relevant and insightful research design that focuses on innovation with all

its levels and constructs that includes the aspects that need to be considered in measuring and developing universities management performance using technical innovation.

"The implementation of an idea related to a new procedure or service or introduction of new elements to the development of service process or operation" is how (Damanpour et al.,2009) defines technical innovation, showing the impactful effect of it in the relationship on staff effectiveness. Also كندة ديب ,& .(2018) (علي البهلول. mentioned that organizational innovation with both its dimensions would affect the process and the impact that staff can have on the organizational process of any firm, hence it's very impactful on academic staff members and the educational process inside any university.

2.1. Staff Effectiveness

2.1.1. Staff Performance:

According to (Suriati Osman, SitiHalijjah, Mohamed NorAzali Lajin,2016) organizational innovation relates the renewal and development of routines, procedures and systems in organizations with administrative innovation and it highly affects staff performance in any organization.

It also indicates that the organizational innovation role should not be reduced and that it is a must to have techniques for any entity. (Suriati Osman, SitiHalijjah, Mohamed NorAzali Lajin,2016)

The size organizations do not have a significant relationship on its innovation while the innovative environment does. Mary M. Corossan and Marina Apaydin,2010)

What supports the aim of this research that previous studies have stated through conducting interviews with managers in different industries the positive relation between innovation and functional areas and business strategy, which support the positive relation between organizational innovation (administrative or technical) and staff effectiveness. (Christiane Prange, Bodo B. Schlegelmilch,2018)

This study strongly supports the relationship between academic life and different industries and how this affects the impact on the outcome of innovation.
It also highlights the close interrelations and importance of innovation in knowledge creation, training and educational impacts in universities and vice versa, how does innovative environment in universities affect the knowledge and understanding of not only the working staff but also the coming generations as they have better understanding of innovation. (EleniGiannopoulou, Pierre-Jean Barlatier, Julien Pénin,2019).

According to (Mehrabani, S. E., & Shajari, M.,2013) employee effectiveness has two further dimensions to be measured, illustrating that the staff needs to be treated as individuals and not as groups, to improve their potentials and for them to be able to reach their capacities.

2.1.1. _Staff Satisfaction:_

(Mehrabani, S. E., & Shajari, M.,2013) suggested that staff effectiveness can be measured through employee performance and employee satisfaction, defining employee satisfaction as performing the job with other employees through satisfying methods which can be through the acceptance and better understanding of technology that this research is trying to test.

Employee performance is also recognized to be one of the key multi-dimensional measures to achieve organizational goal, which makes it one of the strong measures of staff effectiveness. (Mehrabani, S. E., & Shajari, M.,2013)

Finally (Mehrabani, S. E., & Shajari, M.,2013) suggested two more staff effectiveness measures to be tested like employee commitment and employee engagement, and still for this research to reach useful results the best way to measure the staff effectiveness with the moderation of technology acceptance is the employee performance and employee satisfaction in work place.

Empowerment of people is one of the key elements in affecting the staff performance in any organization. (Shadi Ebrahimi Mehrabani[*1], Maziar Shajari[2],2013), This paper reflects the importance and role of staff effectiveness while introducing different dimensions and measures to take

in consideration while testing the effectiveness of people and how they can be affected by other dimensions in the work place.

(Mehrabani, S. E., & Shajari, M.,2013), introduced 4 different dimensions of staff effectiveness, (Staff Performance, Staff satisfaction, Staff engagement and staff commitment).

(Richard J.Woodman, Maria B. Parappilly,2015), also highlighted the fact of the true impact of peer review which underlays the importance and in reference to the definition of staff satisfaction in this research for the amount of acceptance with the tools used and other people in the workplace.

To measure the impact of organizational innovation on staff effectiveness in respective of staff satisfaction in universities, the peer review factor of teaching that is proposed by (Richard J.Woodman, Maria B. Parappilly,2015, has to be taken in consideration as mentioned previously. The success of the peer review teaching overview and model helps in shaping the experience of the staff members in any university.

Hence, this peer review teaching affects and proves the importance of staff satisfaction on the whole performance of the organization.

Therefore, Organizational innovation with its dimensions highly affect staff effectiveness which will obviously affect the staff satisfaction in the organization hence their performance and impact.

2.2. *Technology acceptance*

2.2.1. *Percieved Ease of use:*

When talking about innovation, technology must appear in the horizon. (Alfonso Hernandez-Vivanco, Claudio Cruz-Cázares, Merce Bernardo, 2018) have evidenced that regardless of the size of the organization, there is a notable lower efficiency of firm's performance with less technology involvement.

(Hafidi Mohamed, Mahnane Lamia, 2018) indicated the moderating effect of technological acceptance of staff members and how it positively affects the effectiveness of the academic staff with two different dimensions (Perceived ease of use and perceived usefulness).

Simply introducing technology to modern teaching methods highly affect teacher's effectiveness and student's learning experience. Nevertheless, technology ease of use introduced challenges that needs to be taken in consideration seriously or it would affect the whole process. (Hafidi Mohamed, Mahnane Lamia, 2018)

Dealing with the problem of this dimension (GökçeAkçayır, Murat Akçayır,2018) have also reviewed the educational pros and cons of the technological interference in the education process, proving that staff effectiveness is highly affected with technological acceptance.

Through the references discussed and further more studies to read and implement, a lot of different researchers highly recommend that further studies need to be done in the educational innovation area, and we cannot talk about innovation without mentioning technology, this is where the importance of this study lays.

2.1.2. *Percieved usefulness:*

(Zwain, Ammar,2019) has mentioned that technological perceived usefulness has been considered a rich research area because of its importance and insightful results in the information systems area.

Moreover, research in higher education sector has shown that its crucial to understand and investigate what could technology acceptance affect universities performance in parallel with their staff members performance. This would help build better decisions to how to invest and with which resources and guide the needed efforts and infrastructure needed with the efforts of the university management. (Zwain, Ammar,2019).

In the Arab region, it has been noticeable that the LMSs has been such an impactful and essential asset on the education process. Hence, it would be incredibly important for academic staff members to easily communicate with the technological tools to be able to perform their jobs easily and with more production and effectiveness. (Azawei et al., 2016)

3. Research Results:

3.1. Research Results:

- **H1:** Administrative organizational innovation has a positive relationship with staff effectiveness.

H1 was accepted.

As explained in the previous chapters Administrative organizational innovation proved to have a positive relation with Staff effectiveness using the correlation analysis.

The mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable.

While the Cronbach's alpha results showed the reliability of the hypothesis as well.

- **H2:** Technical organizational innovation has a positives relationship with staff effectiveness.

- **H2 was accepted.**

In this part the previous chapters elaborated and proved that Technical organizational innovation has a positive relation with Staff effectiveness using the correlation analysis.

And the mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable While the Cronbach's alpha results showed the reliability of the hypothesis as well.

- **H3:** Technological perceived ease of use moderates the relationship between administrative organizational innovation on staff effectiveness.

- **H3 was accepted.**

In this part, the previous chapters elaborated and proved that Technological Perceived ease of use Impacts the between Administrative organizational innovation with Staff effectiveness through a comparison has been applied using the ANOVA Analysis and R square Analysis. Results showed that the presence of the moderating variable has strengthened and explained the relationship between the independent and dependent variables more as proposed in the hypothesis of this research.

And the mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable. While the Cronbach's alpha results showed the reliability of the hypothesis as well.

- **H4:** Technological perceived ease of use moderates the relationship between technical organizational innovation on staff effectiveness.

- **H4 was accepted.**

In this part, the previous chapters elaborated and proved that Technological Perceived ease of use Impacts the between Technical organizational innovation with Staff effectiveness through a comparison has been applied using the ANOVA Analysis and R square Analysis. Results showed that the presence of the moderating variable has strengthened and explained the relationship between the independent and dependent variables more as proposed in the hypothesis of this research.

And the mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable, While the Cronbach's alpha results showed the reliability of the hypothesis as well.

- **H5:** Technological perceived usefulness moderates the relationship between administrative organizational innovation on staff effectiveness.
- **H5 was accepted.**

In this part, the previous chapters elaborated and proved that Technological Perceived Usefulness Impacts the between Administrative organizational innovation with Staff effectiveness through a comparison has been applied using the ANOVA Analysis and R square Analysis. Results showed that the presence of the moderating variable has strengthened and explained the relationship between the independent and dependent variables more as proposed in the hypothesis of this research.

And the mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable, While the Cronbach's alpha results showed the reliability of the hypothesis as well.

- **H6:** Technological perceived usefulness moderates the relationship between technical organizational innovation on staff effectiveness.

- **H6 was accepted.**

In this part, the previous chapters elaborated and proved that Technological Perceived Usefulness Impacts the between Technical organizational innovation with Staff effectiveness through a comparison has been applied using the ANOVA Analysis and R square Analysis. Results showed that the presence of the moderating variable has strengthened and explained the relationship between the independent and dependent variables more as proposed in the hypothesis of this research.

And the mean of all the statements measuring the independent and dependent variables of this hypothesis did encourages the relation between variable and their impact on each other as proposed.

Also, the standard deviation of all statements was below 2, which means that all statements were consistent and reliable, While the Cronbach's alpha results showed the reliability of the hypothesis as well.

3.2.   Conclusion:

Therefore, by reaching this part of this research, this chapter concludes the results that were discussed through the research. In reference to the previous studies found giving the insights to follow and also in reference to the statistical Analysis results found to be significant and proved as follows:

Hypothesis one was accepted with a positive correlation proving that there is a positive relationship that exists between administrative organizational analysis and staff effectiveness with both its dimensions merged together, also showing a significant relationship as well.

Hypothesis two was accepted with a positive correlation proving that there is a positive relationship that exists between Technical organizational analysis and staff effectiveness with both its dimensions merged together, also showing a significant relationship as well.

Hypothesis Three was accepted and by using the ANOVA Analysis and the R Square analysis the results showed that the presence of the moderating variable Technological Perceived ease of use enriches and explains the relationship between the independent variable and the dependent variable more and better. Also proving that there is a significant relationship between their relationship.

Hypothesis Four was accepted and by using the ANOVA Analysis and the R Square analysis the results showed that the presence of the moderating variable Technological Perceived ease of use enriches and explains the relationship between the independent variable and the dependent variable more and better. Also proving that there is a significant relationship between their relationship.

Hypothesis Five was accepted and by using the ANOVA Analysis and the R Square analysis the results showed that the presence of the moderating variable Technological Perceived Usefulness enriches and explains the relationship between the independent variable and the dependent variable more and better. Also proving that there is a significant relationship between their relationship.

Hypothesis Six was accepted and by using the ANOVA Analysis and the R Square analysis the results showed that the presence of the moderating variable Technological Perceived Usefulness enriches and explains the relationship between the independent variable and the dependent variable more and better. Also proving that there is a significant relationship between their relationship.

4. Research Recommendation:

4. Suggestions for future research:

The results of this research suggests that future research take in consideration another dimensions of staff effectiveness such as Staff Commitment and Staff Engagement as proposed by (Mehrabani, S. E.,& Shajari, M.,2013). It might give better insight about the impact on Staff Effectiveness.

Also, to overcome the limitations of this research the researcher suggests a wider sample of universities in Egypt for more in-depth insights results to help build better solutions.

The researcher also believes that this kind of researches done over public universities can have a drastic role on the enhancement of the public higher education system, while not neglecting that of course it would face much more resistance of cooperation and might be difficult to measure.

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