

**T.C.**  
**BAHÇEŞEHİR ÜNİVERSİTESİ**

**QUALIFICATION PERCEPTION OF ACADEMICS  
IN UNIVERSITIES FOR INNOVATION  
MANAGEMENT**

**Yüksek Lisans Tezi**

**AYÇA KURNAZ**

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**GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES  
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This thesis read by us, in terms of quality and content as a Master of Science thesis was deemed sufficient, and has been adopted.

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## FOREWORD AND APPRECIATION

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## ÖZET

# ÜNİVERSİTEDEKİ AKADEMİK PERSONELİN YENİLİK YÖNETİMİNE İLİŞKİN YETERLİK ALGISI

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Global dünyada yeniliklere ayak uydurabilmek kurumların devamlılığı ve sektörler arası rekabet için çok önemlidir. Teknolojik ve sektörel gelişmeleri takip etmek ve onlara adapte olmak kaçınılmazdır. Kurumların, sektörde öncü olabilmek için yenilikçi rekabet politikalarını benimsemeleri gerekmektedir. Bu her sektörü ilgilendirdiği gibi eğitim sektörünü de yakından ilgilendirmektedir. Eğitim sektöründe de akademisyenlerin alanlarındaki yenilikleri takip etmeleri ve yenilikçi düşüncüyü benimsemeleri önemlidir. Bu sayede üniversite ortamında yenilikçi zihniyetin temelleri oluşacaktır. Bu noktadan çıkışla Türkiye'deki çeşitli üniversitelerdeki 47 adet akademik personelin yenilik yönetimine ilişkin yeterlik algısının ölçülmesi amaçlanan bu çalışma yapılmıştır. Kişisel bilgilerin belirlenmesi için 16, üniversitedeki yenilik yönetimine ilişkin algının ölçülmesi içinse 46 adet soru hazırlanmıştır. Ölçeğin, yenilik stratejisi, girdi yönetimi, yenilik izleme stratejileri, proje yönetimi, örgütsel kültür ve yapıyı içeren beş alt boyuttan ve beşli Likert tipi 46 maddeden oluştuğu belirlenmiştir. Yenilik yönetimi algısı ile cinsiyet, yayınlanmış makale sayısı ve akademik statü arasındaki ilişki incelenmiş ve bunun anlamlı olup olmadığına one-way Anova test ile karar verilmiştir.

**Anahtar Kelimeler:** Yenilik, Yenilik yönetimi, Yeterlik algısı

## ABSTRACT

### QUALIFICATION PERCEPTION OF ACADEMICS IN UNIVERSITIES FOR INNOVATION MANAGEMENT

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Keeping pace with innovation is very important for persistence of the companies and competition between them in global world. It is necessary to follow-up and adopt the technologic and sectoral developments. r. The companies should adopt the innovative competitive policies to be the leader in their sector. This concerns the educational sector as much as every sectors. It is very important that academics should adopt the innovative ideas and catch-up the innovations in their studying fields.. In this way, the innovative mentality basics will be done in university. This study has been made with 47 academics from different universities in Turkey to evaluate the perception of innovation management of academics. 16 questions are prepared to evaluate the personal information and 46 questions are prepared to evaluate the perception of innovation management. The scale consists of 46 substance of Quintet Likert type and involves 5 dimensions consisting of Innovation Strategy, Income Management, Following Innovation Strategies, Project Management, Organizational Culture and Structure. The relationship between the perception of innovation management and gender, published articles and academic status has been analyzed and decided with one-way Anova test whether the results are significant or not.

**Key words:** Innovation, Innovation management, Qualification perception

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## **ABBREVIATIONS**

AHCI : Arts and Humanities Citation Index

SCI : Science Citation Index

SSCI : Social Science Citation Index

EI : Engineering Index

R&D : Research and Development

KOSGEB : Küçük ve Orta ölçekli Sanayi İşletmeleri Geliştirme Birliği

TÜBİTAK : Türkiye Bilimsel ve Teknik Araştırma Kurumu

TTGV : Türkiye Teknoloji Geliştirme Vakfı

## 1. INTRODUCTION

In recent years, innovation has become one of the most important issues for all companies; just because they cannot subsist and compete unless they keep up with the swift fast changes in technology and science which is so hard to catch up. It is so important to keep up with innovation in order to compete in sectors. It is seen that the organizations, which adopts the innovator competition policies, are pioneer and leader in their sector. In this context, the importance of the innovation for the success and continuity of the organizations cannot be denied. Damanpour et al. (2006) have been shown in their research that, the organizations should be innovator in order to develop efficiently and persist under the circumstance of evolution of the technology and the ability of finding resources. That's why innovation creates a big competition area for managers and academics to research. Likewise, in a research about the importance of innovation for organizations made by Naktiyok (2007), companies should be able to predict the changes, to identify and to be the initiator instead of keeping up with the changing process. The organization should act just as the change is itself and accept the policies demonstrating compliance to outside.

To define the innovation; which has a great importance for the organizations; is as important as the ability to practice the innovation. The definition of innovation helps to identify how it is perceived by the organization. Innovation is not just limited with to create new ideas, but to put them into action and can make it a commercial product or to serve. To create a new idea and turn them into a product or serving depends on how the workers identify the innovation.

In dictionary, innovation's meaning is modernization, alternation. These two words have a little different meanings. Innovation can be interpreted as improving something that exist already. For instance, car is already exist, but a sport car is a new kind. It is understood that, an existing object or case becomes a new existing object or case with some regulations. On the other hand invention means something different. We can say that, invention is to explore something that has never been existed. More precisely it can be interpreted as to bring something that has never been known before to a body. In a

technical outlook, there is a concept called as sorting algorithms in algorithm subject. Linear sorting algorithm is the first developed sorting algorithm. However it takes so much time. It is not effective. It interprets one of the components of a sequential numbers over and over as it is not in sequent. However bubble sort algorithm knows if a serie is sequented in a transition and ends the process. Now we may have a question in our minds as: Is the bubble sort algorithm is improved by developing the linear sorting algorithm so by the innovation? So is this an innovation ? Or let's think something like that. Has the linear sorting algorithm been used for a long time and thought ineffective, instead of that a new algorithm called bubble sort algorithm improved? Which analyse is innovation? It is obvious that both of them are innovation if we look up the dictionary meaning. The examples can be multiplied. As it is understood, the aim of innovation is creating newness. It doesn't matter if we make some changes on existing system or improve new alternative systems supposed to take place of existing system. What is important here is to make innovation.Schumpeter (1934) identified the innovation as a concept for organizations' economic development and gives the advantage of sustainable competition in his/her book. In another research Tuaminen et al.(1999) described the innovation as a final of a process, in which new products and services has come out, and also to make something in a different way than the way it is used to be done.

Innovation cannot be handled just as only a description for an organization. As the definition of creativeness leads to innovation; the application of the creative ideas, provides variety. That is why Variation and creativity can be examined as they integrate the meaning of innovation. Besides, the innovation can be completed by the application.

Baregheh et al. (2009) described the innovation as “the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.” The applications can be a new product as well as a new process or in an academic research.

Innovation should be focused on not the result but the process and all the processes executed by the organizations must be managed properly through the innovation policies. The ability of these kinds of management's applications is only possible with a

high vision, a strong insistence and workers who have high perception of innovation (Bülbül, 2012). Innovation ideas come up with attendance of all employees and evaluated. This application cannot be supported unless the employers who have a high perception of innovation exist; also as well as this there won't be any contribution of them such as an idea or application to the process. The organizations ability to adapt to innovations in their environment depends on only if they organize their institution based on innovation and actualize new products' and services' designs (Öğüt et al. 2007). The employers' high perception of innovation plays an indispensable role in managing the process for the company.

The organization's culture, the high perception of innovation of the leader's and employees' are very important factor to maintain the innovation process. The organizations trying to accommodate to innovation are going to be successful if they have the leader and employees that adopts the innovation culture at the very beginning. The leaders should be in favor of innovation, encourage the employees to innovation, listen to their ideas, appreciate them for their innovator thoughts and acts, explain in a clear and certain way , strengthen the communication, observe them and control and improve the process with them.

It is also so important for a leader of an organization to manage the innovation as much as to be an innovator. The leader must be capable in some dimensions in order to success. In this thesis, the five dimensions are discussed. These dimensions are: input management, innovation strategy, organizational culture and structure, Project management and innovation follow-up strategies.

As we discussed before, it is very important to be able to explain freely the innovator ideas for the employees in the company. There won't be any new ideas unless this freedom exists. The academics' must be encouraged to develop new applications and methods, by using their skills and knowledge they had before in their past academic experiments, and effort to adapt to the university they are working for. The important thing is to decide the area of a subject in which the innovation process will be started. Agreement must be provided in the meetings which everyone can freely explain their own ideas. According to Scott et al.(2006);

*“Before deciding how to play the innovation game, companies have to decide where to play. The good news is that, unlike professional sports teams that go where the schedule makers dictate, companies can choose to play in many different markets. But that is also the bad news. Too much choice can be overwhelming. And the innovation process can slow to a crawl if managers pursue opportunities that don’t have a realistic chance of seeing the light of day.”*

Innovation is so important for companies to develop and persists. This importance is valid not only for the commercial companies but also educational institution. All the stratum and parts that community consists of are supposed to get education from these institutions. For this reason the functioning and serving of the education affects all community (Kabakçı 2008). This helps to educate people with a high perception of innovation. Entrepreneurship has achieved a great importance in the world recently. Some kinds of studies are being made in order to spread the entrepreneurship among the youth. The culture of entrepreneurship can be primarily thought to the youth in universities. Furthermore the education institutions have a key role in growing up people who have high perception of innovation.

Innovation in education means to create a high quality education, to arise children who can catch up recent events and think creatively, to make process of education more effective and target oriented (Musluoğlu, 2008). Innovation perception in educational institutions is possible in the universities as same as in other companies with the academics and workers who are entrepreneur, open minded and with a high perception of innovation. As well as this, the academics should contribute and support the innovation in educational area and inside the company, with publishing and projects and classes they managed.

For instance, the academics; working with the companies such as KOSGEB and TÜBİTAK that gathers the commercial projects with academy, will turn theory into practice and encourage their students to be involved in these projects. Furthermore they will take the initiative for the acceptance of students’ innovator ideas to these companies. That’s why it has been asked in the beginning of the questionnaire that if they have ever undertaken any TÜBİTAK, KOSGEB or European Union Project. This is a very valid criterion to evaluate the innovation in academy.

The vision of TÜBİTAK has been described as “TÜBİTAK; has the vision of being an institution that is serving the sustainable development of our society and our country to improve the quality of life, innovator in science and technology, router, participatory and collaborative; has the function in supporting the academic and industrial R&D activities (research and development) and innovations, running R&D institutions which are managing research and technological development programmes in terms of national priorities, and as well as determines the policies of our country’s in science and technology and publishes books and journals to increase the awareness of all segments of society.” in their official site. The vision of KOSGEB is described in their official site as : “ To be an organization that provides SMEs of our country to have a say in the global market, effects in policy-making in entrepreneurship for SMEs, to be a model organization around the world“

Patents and utility model are also an important criterion for evaluating innovation at the academy. Patent and utility model can be described according to the definition of the Turkish Patent Institute as “ The rights granted to the owner by preventing to produce, to sell or to use the invention by the third parties without permission for a limited period of time” The utility model ; compared to patent, is irrespective of the inventive step, procedures and products and chemicals as a result of procedures are not protected, there is no research report and the duration of the protection is 10 years.

Articles of international publications and classes of journals are also an important criterion. The academic who work for national and international publishing, always have to follow up and reproduce the innovations. For this reason, the number of articles published in the most comprehensive journals was asked in the introduction of the questionnaire. We chose the international journals of Arts and Humanities Citation Index (AHCI), Science Citation Index (SCI), Social Science Citation Index (SSCI) and Engineering Index (EI) in this questionnaire.

As it is known, there have been studies about how to measure the perception of innovation in different ways for different sectors. For instance; in our country, innovation and entrepreneurship in university is measured with data collected from institutions and organizations such as IHE, TPE, Ministry of Development, KOSGEB, Ministry of Science-Industry and Technology, TÜBİTAK, TTGV, TÜBA. These data

defined as competence in science and technological research, intellectual property pool, cooperation and interaction, culture of entrepreneurship and innovation.

Studies that measure the perception of innovation in educational institutions are not very much. Therefore, in this study, it is tried to measure the perception of the academics in universities because of their key role in maintaining and developing innovation in educational institutions as well as developing innovative people. As well as the universities educate persons for all sectors, the lack of such studies also provides the need for this study. In this study, we aimed to measure the perceptions of innovation primarily academics working in educational institutions. We focused on five key areas as measurement is in progress. These areas are input management, innovation strategy, project management, organizational culture and structure, innovation follow-up strategies.

The academics' perception of innovation plays a very important role to sustain the innovative culture and transfer to the students. Innovation is not just a thought or concept but it also has to be put in practice in order to increase the effectiveness (Bülbül, 2012). The perception of innovation, the ability of the academics transfer this element into the new members of the faculty and students and go between sustainable innovation culture at the university will positively affect the process of innovation.

## 2. LITERATURE REVIEW

As we mentioned before in this study, innovation is an important issue about all firms and sectors. Through this point there are a lot of studies made about innovation in literature. Most of the studies are about innovation management characteristics. There is not too much study similar to our study which is about the innovation in universities.

When we analyse the literature, we categorized the studies according to methods of studies. These methods are; case studies, survey, review studies and models developed about this issue.

As in all studies in research areas review studies have a significant importance. Review studies help us to clarify the characteristics about different issues. Most of review studies about innovation is not close to our focus point in this study, but they can help us to clarify the innovation management characteristics and principles. Also we know that there are a lot of different innovation management principles which are implemented by managers in different sectors. Through this point of view Tuominen et al.(1999) tried to analyze the characteristics of product innovation management systems. They proposed an approach and a questionnaire to clarify the issue. They created a basic model to show the steps of concept. They made an interview with three different Finnish companies with the help of their questionnaire. As an acknowledgement they told that their study will end when they make an interview with Japanese companies. At the end of study they decided that there need to be a customer needs assessment phase to be sure about what customers need as a new product. Also they decided another critical factor is integrating the goals of product development projects with innovative processes. Another review study has been made by Archibugi & Pianta(1996) about the studies about how to measure technological changes through innovation surveys. They researched how we can use the patents and innovation principles when we are measuring the technological changes. They made reviews about recent developments which are developed to measure technological changes. They used patent data and indicators which are created by using innovation surveys. They classified innovation into 4 categories such as technology, product, sector of production and sector of use. They created a framework which tries to clarify how firms use innovation surveys and patent data. They defined



some indicators which are being used to measure technological changes and innovations such as evidence at firm level, analysis of industrial structure. As a result, they showed a rich and important evidence about technological activities of firms which are defined via using the indicators that they mentioned.

In literature there are not too much studies done with developing models. One of the studies which have been done by developing a model is done by Haelremans & De Witte (2012). They aimed to analyze the effect of innovation in education via using a mathematical model. Focus point of study was about the effect on innovation on school performances. To reach some results according to this aim they used a tailored fully non-parametric conditional efficiency model and applied this model in Netherlands at secondary schools. The application data has been taken from Ministry of Education in Netherlands. They applied the model in 119 Dutch secondary school, these schools have 20400 students which is equal to 22 percent of total secondary school student in Netherland. They used the expenses per student as an input and major parameters. These parameters are directly effective on educational innovation. These are; profiling and pedagogic process and education chain innovation. At the end they reached that these major parameters are significantly related with school efficiency. The most important result is that the innovations are positively related to education efficiency. Again about measuring innovation issue, Tohidi & Jabbari (2012) made a brief study. They used survey as the method of study. They tried to provide a framework to measure innovation in companies. They created a questionnaire and applied it in some companies. At the end they created a framework.

In innovation measurement another important key factor is defining a measurement scale. Through this Bülbül (2012) tried to develop a scale which can be used for measuring innovation and innovation perceptions, capabilities. He developed this scale for school managers. He applied this study on 216 school managers. To realize the effectiveness of this study he used factor analysis. He decided that there have to be 4 sub-levels, such as input management, project management. After the analysis, he decided that the scale created in this study can be used for defining and measuring the innovation perceptions and capabilities of school managers in education sector. Also we used the scale which is developed in this study. In another study via using same scale

have been taken by Göl & Bülbül(2012). They aimed to find how teachers perceive the innovation management principles in education sector. The study applied in 68 primary schools with 396 teachers in Kırklareli. They used gender, age and professional seniority as factors which effect teachers' perceptions. As a result gender is not creating a direct difference about perceptions, but in some situations age and professional seniority levels could create a difference. As a kind of measurement study about innovation, Çuhadar et al.(2013) tried to define the relationship between individual innovatives and technopedagogical education competencies of pre-service teachers. They made a survey for the issue. They applied this survey in Trakya University. The participants are pre-service teachers which are senior students in 10 different teacher education programs. They used one-paired t –test and one way anova test to make analysis. As a result they found gender variable so not significantly effect the issue. It can not create a significant difference. Also they defined pre-service teachers' innovative education capabilities are questioning level.

As we mentioned in our study before, innovation is an effective tool in every sector and firm. Also the place of firms are important to target the firm to the innovation policies. From this point of view Tutar et al.(2007) try to realize how the conditions of firm area effect the creation of innovation and usage of innovative management policies. This study applied in Kayseri Free Zone as a case study. They used the survey data which are created from Kayseri free zone companies. As a result there are a lot of advantages gained from being in free zone. But only the firms which have R&D departments can apply innovation policies. The most innovative work is producing different and new products. Through these results, they decided that the firms located in Kayseri free zone do not have creative and innovative strategies and policies which can be applied in long-term. As an advice to these firms, there have to create a communication link between Technopark which is developed in Erciyes University and firms in Kayseri free zone. Another case study about innovation issue, made by Kirkgoz(2008). She applied her case in education sector. She assumed Communicative Oriented Curriculum (COC) as an innovation in education. She tried to realize the effect of implementing COC while teaching English to young learners in Turkish state schools. She used 32 Turkish teachers of English. These teachers are giving lecture to 4 and 5 class students. The number of school she analyzed is 22. She used two ethnographic data collection tools.

The aim of study was to realize the effect of COC as an innovation on the English teachers. At the end she realized that there is a strong variation among the instructional practices of teachers involved in TEYL's (Teaching English to Young Learners). Also she suggest that to implement COC better teachers used to have more training to increase their awareness about innovation to maximize the good effects of new implementations such as COC.

As we can see from the studies in literature, there are different types of studies. Most of these studies are about industries. There is not too much study about innovation in education sector. We tried to find studies which are focusing on education sector's innovation policies and perceptions. We think that our study will be a new and good study about innovation perceptions in education sector in literature.

### **3. DATA AND METHOD**

#### **3.1. PURPOSE**

Universities will support the development of the national economy with innovative educational design. Intellectual power of the people educated by universit should be open to innovation. Academic staff's efficacy of innovative provides the basis of innovative mindset. For this reason, the perception of academic staff for the management of innovation is important. The perception may vary from person to person. It makes a difference in the management of the innovation. In this study, we aimed to determine the academics' perceptions of efficacy for the management of innovation in universities and reveal the differences by using the scale which is developed by Tuncer Bülbül (2012). In this questionnaire prepared for the purpose of this research, answers will be searched in the following sub-questions:

- 1) Is the perception of faculty members' for the management of innovation enough?
- 2) Does the perception of faculty members' for the the management of innovation qualifications changes according to :
  - a. Gender?
  - b. Academic degree?
  - c. Number of published paper?

#### **3.2. GROUPING OF THE SURVEY AND EXPLANATION PART**

This study which aims to reveal the competency perception of innovation management is in survey model. The questions are grouped under the five dimensions which the academics should be sufficient in order to manage the innovation. The following will explain five dimensions.

##### **3.2.1. Input Management**

Input management means to provide the necessary sources to the company in process of innovation management. These sources are labeled by the needs of the company. 9 questions are prepared to evaluate if the inputs can be provided by the academics or not when it has to be done, in the input management chapter. For instance, we aimed to evaluate if the academics will support the process of innovation with financial sources

when the company needs, with the questions such as “I will try to find support for the innovation studies in the university from the private enterprises around the university such as professional chambers, non-governmental organizations etc...” and “I will try to find support from the utilities around the university for the studies of innovation.”. Sometimes it is necessary to find sponsor to support or undertake the financial expense for the preparation of an organization and buying the materials needed in a Project, conference or competition at universities. The financial resources for these studies sometimes need to be found from out of academy according to the size of the project. The effort of the academics’ working in the innovation studies, to achieve the contracts is so important to support these kinds of innovation studies. In this question we aimed to evaluate if they would feel responsibility to provide financial resource or not when it is needed.

The physical resources should be provided in the process of innovation as well as the financial resources. It is important to supply physical resources for continuity of the process of the innovation in the lack of the physical resources with the attempt of the academics. It is important to take the advantage of the presence of physical resources by using them to carry on the process of the innovation. We aim to learn whether or not the academics staff takes the advantage of physical resources that the university has, in the process of innovation when it is needed by the question as: “I use the areas such as meeting room, studying room at the university to contribute to the studies of innovation.”

We aim to expose the attitude of academics when the resources have to be supplied from out in the process of innovation with the questions as: “I often use the private and public labs to carry out my innovation studies.”, “I provide the equipments might be used in the process of innovation.” And “I use private companies’ certificated technical education programs for my innovation studies.”

Besides the financial and physical resources, the human resources are also in the inputs of the process of the innovation. As well as financial support and material supply, the support of provision of information carries a big importance for the progress of the studies. In some topics, it is better to use the knowledge of experts. The question of “I take expert consultant out of university about innovation” is being asked to determine

the aim of the academics in usage of the human resources. That support supposed to get information about a project management, program usage or likewise topics. The amount of people supporting the innovation and getting involved in the process also shows how much the human resources are being used.

The questions of: “I inform the academics about the national and international financial support funds to join the activities like conference and workshop.” And “I follow up the recent activities (in-service training, seminar etc.) available for instructors to reach the external information for innovation.” Are being asked to evaluate how much the academics devote themselves to the innovation.

The innovation thought of the academics that follow up the innovation studies and encourages other academics to join these studies, will create the process. The academics having that kind of thoughts will encourage their colleagues and support their studies.

As a result, the academics’ awareness of the necessity and importance of those 3 resources will show that they support the innovation in the university. We aim to expose that support with the 9 questions asked in the chapter of input management.

### **3.2.2. Innovation Strategy**

Another important topic in the process of the innovation is to have whole company to get involved in this process. The studies about this topic and the positive look at the process of innovation and encourage other university academics is very important. The things have to be done in this process should be determined. Innovation strategy means that to apply the plan that has been made as same as in any area to evaluate the development totally, to improve if necessary according to these evaluations and to comment on outputs.

The studies which are always valid on the management of processes are also here. There can be some disruptions when it is time to implement the plan, which has made at the very beginning. The decisions has to be made in order to fix these disruptions. It is known that; everybody has to be involved in this process, explain everything clearly to everyone that how they are going to make it and an effective network has to be built in order to manage the process well. The technology, programs and informations owned

by the company has to be used properly by everyone. The 7 questions, which aim to evaluate all these, are positioned under the innovation strategy heading.

The knowledge is the most powerful weapon in present era. Duplication the knowledge that human resources have, is the hardest thing to do. It has to be known how to get the information and how to use it effectively in order to turn the knowledge into the advantage. The resources should be appropriate for innovation strategy and should be used for the common purpose of the company in the process of innovation. We aimed to determine how academics reach the information and think of sharing it with other academics with the questions as: “I try to supply the books, journals and resources to university library about my research topic to reach the information for innovation.” “I strain to explain the latest inventions about my field of experience by other academics.” And “I always scan new inventions in my field.” By this way the knowledge will be reached and more effective by sharing with the other.

We have mentioned that, to follow the strategy running is as important as to determine it in a right way. The elimination of useless steps which doesn't serve to innovation process after following-ups is important as well as to determine the right strategy. We try to evaluate how academics behave after determining the steps effect the process negatively and misses the target with the question of: “I immediately end the projects that give me the feeling as they won't give a positive contribution to the university and its environment.”

The studies must be done to serve the purpose in the innovation strategy as we've mentioned. New projects and researches can get started and new inventions can be done. We identified the Outlook of producing new items with: “My goal in my researches is to produce studies worthy intellectual property rights.” We asked the question of “I always write articles in my study field.” to evaluate the knowledge production of academics for innovation.

We will mention the importance of producing a common innovation strategy and making it understood by anybody. The common target of everybody and the same things to do to reach the target will directly affect the success of the result. In order to evaluate the awareness of that we asked the question of: “I work to create an innovation vision that is shared by whole academic staff of our university.”

### **3.2.3. Organizational Culture and Structure**

The high perception of innovation of all instructors and support for the common plan carries a big importance for the success of the innovation studies. If this is provided, the process will progress positively and fastly. The groups, consist of the people adopted the same culture, can easily be on the target together. By this way the process can be managed effectively all together. The decisions can be made quickly and applicable in the meetings where sharing is too much.

The academics should have a positive Outlook and be able to make common decisions in order to manage the innovation right and apply it. They should be encouraged to declare their ideas clearly without hesitating to share with the others in the company. The working atmosphere and attitude within the organization is shared in the internet and read by everyone in the innovation companies. The companies encourage their employee to produce and share their ideas with others, become worldwide organizations and head especially technological developments. When the recruitment process and interviews of these companies are analyzed, it is possible to evaluate that there are people from every kind of ages and statuses which work actively, think new and differently and share it bravely in the groups. These kinds of companies adopt the same common innovation culture and pay attention to get compatible people involved in the group. We asked one of the 6 questions: "I support and try to keep the academic staff that adopts and defends the innovation ideas in the university." to evaluate how much academics are aware of the importance of keeping compatible people in the academy.

We asked the question: "I emphasize the importance of innovative understanding to all the staff in the university." That points the encouragement to innovative culture. Another step to create this culture is to make the process to be understood by everyone in the group. "I clearly explain to anyone what benefits the innovation brings to the university and around." question is asked to determine this. It is important to share all innovative ideas easily in the company. To determine how much the academics will support ths sharing, we asked the question of: "I respect to all creative and innovative ideas of all staff in the university." The next step is to appreciate the activities of employee's who has this culture which means to encourage them. "I show my satisfaction about the success of the innovative people in the university." And "I support



all efforts and researches through innovation of all academic staff.” questions are planned to evaluate the thoughts about supporting and showing satisfaction for contributions of the academics who adopt innovation and start to study about that. As a result, it is necessary for the academics to join the process, to explain the ideas easily, to respect others’ ideas and look positively to practicing, to provide the knowledge sharing in all hierarchy.

#### **3.2.4. Project Management**

The project must be decided in planning phase of innovation process. The resource, income and timing plans of the project, which will be chosen from other projects, must be done. Initiation of a new process will create a risk factor in every field. The risk management in a good way is very important. In this way, the project results can be obtained efficiently. We asked to the academics the questions of: “I believe in earnings of the risk of innovative academic process will return.” and “I’ll be prepared for the unpredictable results of the innovation process at the university.” Performance can be improved by managing the risk of the project.

Selection of the right project is also important. We found it proper to ask to academics “I try to improve the rating scale to measure the effectiveness of innovation projects.” In order to question the awareness of the importance of choosing the innovative project that will serve the purpose of and the studies for this.

“I support the cooperation of all the staff with each other to improve the innovative projects.”, “I always observe the contributions of academics involved in the Project management” and “I believe the innovation will come from every grade of academics.” questions will help us to understand the outlook of all academics through the importance of the innovation studies, that need the joint working in the universities. The perception of the academic about this issue carries a great importance because to create that common culture is important for outgrowth of the project. So the question of “I effort to have the sense of ownership for innovation all over the university by creating strong links between staff.” is also needed to be asked. Furthermore, the attitudes which encourage everybody to share the ideas are very important. “I set up open communication with all academic staff and students in innovation process.” And “I pay attention to academics speeches in all innovations.” questions are prepared to identify

the attitude with that encouragement. The contribution is undeniable as much as the idea, therefore the applications in the process are important contributions. The question of “I always observe the contributions of academics involved in the Project management” is prepared to measure how much academics contribute to the process by working in as well as creating an idea. Academics are also observers. Therefore they will be the best observers in the process. The agreement should be done on a common subject after obtaining the promotion of innovation and the participation of all members. If a decision is taken, there will be an aim and a real process will start to practice it. The “ I internalize consensus and common approach while making a decision.” Question is made for this purpose. While making a decision, another thing should be careful about is the decision technic, which can be effected by the limited budget. Whether the earnings are sufficient for the expenditures is important. “I analyze the incomes of innovation to the university.” The right planning of resources is as important as the budget, so we asked the questions as: “I take extra care of choosing right equipment and resources in innovation process.” And “I pay attention to use university’s resources effectively in innovation process.”

The academics are supposed to follow-up the contemporary developments closely because they observe and teach. For this reason they should keep up with the time and innovation. The question of “I try to make the innovation, adaptation to the environment and environmental integration seen as mediators” is important in this respect.

### **3.2.5. Innovation Following Strategies**

It is important for innovation process to be in interaction with companies and webs working in this subject. In Turkey, Tübitak and KOSGEB organizations contribute to the projects produced by innovative thoughts with their budgets. It gives many advantages to be in interaction with these kinds of organizations, which gather academic knowledge, innovative thought and commercial environment and also provide financial resource to the owner of the idea which is the biggest obstacle for the start of a Project. “I support the process of co-operation between university-industry for commercialization of innovation.” Question helps to explain that. The academics can support the innovation by involving their students in these projects or directing them to get the support from of these organizations for their own individual innovative projects.

“I support the entrepreneur applications of the students to the open support programs of the organizations like Tübitak, KOSGEB etc.”, “I interact to transfer new technologies to the students in academic business partnership.” And “I search for webs in academic business partnerships.” questions are prepared for that.

Social and electronic-business webs are another effective way to follow-up the innovation. Social and electronic-business webs are popular ways to share ideas in international arenas nowadays. “I follow-up the projects on social and electronic-business webs like (LinkedIn, Facebook etc) for innovation.” , “In order to catch up with the innovation, I follow-up the online web lectures of international universities available for academics from all over the world.”, “I try to join in international academic co-operation webs.” And “I join to international academic exchange programs for education.” Questions are asked to evaluate the perception of academics about this.

### **3.3. ASSUMPTIONS**

In this study,

1. When responding to academics surveyed sincere act,
2. The experimental and control group in terms of academics, academic achievements there is no significant difference,
3. Content validity of the questionnaire for the expert conviction is assumed to be sufficient.

### **3.4. LIMITATIONS**

1. The study includes academics from various universities involved in Turkey. 47 scholars participated in the survey.
2. This study is limited by this survey’s questions.

#### 4. CALCULATION AND RESULT OF STATISTICS

Twenty-three of forty-seven men and twenty-four of forty-seven women contribute this questionnaire. The number of ongoing PhD is 17, PhD is 2, assistant professor is 16, associate professor is 6 and professor is 6. Also you can see these results at appendix 1 for gender factor, appendix 2 for academic position factor and appendix 3 for number of articles published.

For question 1:

Four of twenty-three men and eight of twenty-four women disagree this statement. Six men and three women less agree, six men and eight women moderately agree, five men and three women very agree, two men and two women totally agree this statement. Women's and men's answers mean is 2,46 and 2,78 that means most women and men academics moderately agree with idea for finding support from public organizations for innovation works. According to the one-way Anova, p value is equal to 0,390 which is bigger than 0,05 and that means we accept the main hypothesis which is "There is not a meaningful relationship between gender and trying to find support for university's innovation research from public institutions around the university."

After the gender comparison, the control is continuous with academic position. It can be seen by looking the answers's mean that while ongoing Phd assistants, assistant professors and professors moderately agree this statement, PhD assistants disagree and associate professors less agree this statement. One-way Anova test calculates a significance level which is equal to 0,251 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 1.

In this statement, we tried to realize if there is significant relation between number of published article of academics and our questions. We categorized number of articles into 5 different groups. Group one is formed with the academics who have no published articles, group 2 is formed with the academics who have one published article, group 3 is formed with 2 published articles, 4 is formed with 3 published articles and 5 is formed with the academics who have 4 and more published articles. We calculate the number of articles via using our survey data. We asked our participants to number of

their published articles which are published in 4 different citation indexes. These indexes are; Arts and Humanities Index, Science Citation Index, Social science Citation Index and Engineering Index. We analyze these groups by using SPSS one-way anova test.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 5 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. So we can say that group number 1 and 5 moderately agree with question 1. Group 2, 3 and 4 less agree with it. Through this result we cannot say that there is relationship between the number of articles and question 1. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,887 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 1.

For question 2:

In the survey, statement 2 differs from statement 1 by the corporation type. Private organizations are more preferable than public institutions and men are more prone than women trying to find support for innovation. Women and men academics's results mean is nearly same and equal to 2,38 and 2,78 respectively. According to the one-way Anova test, the p value is equal to 0,280 which is more than 0,05 and it shows that null hypothesis is accepted to be true. There is not a meaningful relationship between gender and predisposition of finding support from private institutions.

It can be seen by looking the answers's mean that while ongoing Phd assistants, assistant professors and associate professor moderately agree this statement, PhD assistants disagree and professors less agree this statement. One-way Anova test calculates a significance level which is equal to 0,300 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 2.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Through this result we cannot say that there is relationship between the number of articles and question 2. As evidence to this result,

we can show our one way Anova test. Our p-value is equal to 1,000 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 2.

For question 3:

There is almost the same number of academics who disagree with statement 3. The statement 3 is about getting expert support from outside the university for innovation. One-way Anova test result “p” is equal to 0,773 and it is more than 0,05. By looking the one-way Anova test result, null hypothesis is accepted to be true, that means there is no meaningful relation between gender and getting expert support from the outside the university for innovation.

It can be seen by looking the answers’s mean that while ongoing Phd assistants and associate professor modaretly agree this statement, PhD assistants, assistant professors and professors less agree this statement. One-way Anova test calculates a significancy level which is equal to 0,839 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 3.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 5 are which is closer to 2. As we mentioned 2 means less agreeing with statement. So we can say that group number 1 and 5 less agree with question 3. Group 2, 3 and 4 modaretly agree with it. Through this result we cannot say that there is relationship between the number of articles and question 3. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,725 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 3.

For question 4:

Academics tend to take advantage of the university’s facilities like assembly hall, study room to use the advantage of innovation in the university studies. It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and benefit from the positive point of view of physical facilities. P value is equal

to 0,082 which is larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 4.

It can be seen by looking the answers's mean that while ongoing Phd assistants, assistant professors and associate professors agree with a lot, professors modaretly agree, PhD assistants less agree this statement. One-way Anova test calculates a significancy level which is equal to 0,497 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 4.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. So we can say that group number 1 agrees with question 4 a lot. Through this result we cannot say that there is relationship between the number of articles and question 4. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,873 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 4.

For question 5:

Academics mostly do not benefit from private institutions for technical certification training, but some of academics do. Also, the p value which is equal to 0,138 is bigger than 0,05; therefore, null hypothesis is approved to be true which means that there is not significant relation between gender and tendency of participation to technical training.

It can be seen by looking the answers's mean that while ongoing Phd assistants and assistant professors moderately agree with, PhD assistants, associate professors and professors less agree this statement. One-way Anova test calculates a significancy level which is equal to 0,718 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 5.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 2 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group 3 agree with statement 5 a lot. Group 4 and 5 less agree with it. Through this result we cannot say that there is relationship between the number of articles and question 5. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,464 which is bigger than our significancy

level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 5.

For question 6:

According to the server result, many scholars do not use the private institutions' labs mostly for university's innovation work. A thumping majority choice the 1 option which represents strongly disagree this statement. Base of the result of the test which is p value 0,554 is more than 0,05, there is no significant relation between gender and statement.

It can be seen by looking the answers's mean that while ongoing Phd assistants disagree, PhD assistants, assistant professors, associate professors and professorsless agree with this statement. One-way Anova test calculates a significancy level which is equal to 0,762 is more than 0,05 and the p value shows that there is not significant relation between academic status and statement 6.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 2. As we mentioned 2 means less agreeing with statement. Through this result we cannot say that there is relationship between the number of articles and question 6. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,882 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 6.

For question 7:

Academics tend to supply of tools and equipment for innovation regardless of gender. P value is equal to 0,824 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by looking the answers's mean that while Phd assistants and professors less agree, ongoing PhD assistants and associate professors modaretly agree, assistant professors agree with a lot this statement. One-way Anova test calculates a significancy level which is equal to 0,035 is less than 0,05 and the p value shows that there is significant relation between academic status and statement 7.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3



means moderately agreeing with statement. Through this result we cannot say that there is relationship between the number of articles and question 7. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,957 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 7.

For question 8:

The most academics give information about the financial support for the participation of national and international funds. Every academics attend except six of forty-eight people, the null hypothesis is accepted which is there is no significant relation between this statement and gender. P value is equal to 0,256 which is bigger than 0,05.

It can be seen by examining the mean of answers that ongoing PhD Assistants and assistant professors moderately agree with our statement, PhD degree assistants and professors less agree with it. Also associate professors agree with a lot the statement 8. Through this result we can not say that there is relationship between academic status and the statement 8. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,186 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 8.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group 2 agree with it a lot. Through this result we cannot say that there is relationship between the number of articles and question 8. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,852 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 8.

For question 9:

The null hypothesis is that there is not a significant relation between gender and statement 9 which is “In order to achieve the necessary external knowledge for innovation,I do not would keep track of events that are open to faculty.”. According to one-way Anova, the p value is equal to 0,386 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors moderately agree with our statement, PhD assistants less agree with statement 9. Assistant professors and associate professors agree with it a lot. Through this result we can say that there is relationship between academic status and the statement 9. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,033 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 9.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Through this result we cannot say that there is relationship between the number of articles and question 9. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,981 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 9.

For question 10:

Although there is any expressive relation between gender and statement 10, result mean shows that most academics modaretly agree with seeking to investigate the supply of the university library in order to achieve the necessary knowledge for innovation on their research books, magazines and resources. Significancy level is 0,111 which is less than 0,05; null hypothesis is acknowledged to be true. The null hypothesis says that “There is not a substantial relation between gender and statement 10.”

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and professors moderately agree with our statement, assistant professors and associate professors agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 10. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,247 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 10.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2 and 3 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4 and 5 modaretly agree with

question 10. Through this result we cannot say that there is relationship between the number of articles and question 10. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,494 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 10.

For question 11:

Academicians tend to scan in their own new knowledge, faculty members nearly give the same answer, they agree with a lot this statement and women and men scholars' answers mean is 4,00 and 4,22 orderly. One-way Anova test significancy level is 0,507 which is bigger than 0,05. Thence, null hypothesis is certified. There is not meaningful relation between gender and preferring scan in academics's new subject.

It can be seen by examining the mean of answers that ongoing PhD Assistants, associate professors and professors agree with our statement a lot, PhD assistants modaretly agree with statement 11, assistant professors totally agree with it. Through this result we can not say that there is relationship between academic status and the statement 11. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,122 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 11.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. So we can say that all group numbers agree with question 11 a lot. Through this result we cannot say that there is relationship between the number of articles and question 11. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,820 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 11.

For question 12:

According to the one-way Anova test result, the significancy level is 0,706 which is more than 0,05, that means there is not significant relation between gender and academics's effort which they spend to be understood the innovations in their by all faculty members. But most of them modaretly agree with this statement.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professor and professors moderately agree with our statement, PhD assistants less agree with statement 12. Through this result we can not say that there is relationship between academic status and the statement 12. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,438 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 12.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. So we can say that all group numbers agree with question 12 a lot. Through this result we cannot say that there is relationship between the number of articles and question 12. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,914 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 12.

For question 13:

According to one-way Anova test, the p vlaue is 0,133 larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 13 which is “I try to have a clear vision of innovation which is known and shared by all the academic staff in university.”. Regardless of gender most academics modaretly agree with statement 13.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professor moderately agree with our statement, PhD assistants and professors less agree with statement 13. Through this result we can not say that there is relationship between academic status and the statement 13. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,417 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 13.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. So we can say that all group numbers agree

with question 13 a lot. Through this result we cannot say that there is relationship between the number of articles and question 13. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,958 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 13.

For question 14:

The null hypothesis is that there is not a important relation between gender and statement 14 which is “In my research, it is my goal to produce a candidate to intellectual property rights.”. According to one-way Anova, the p value is equal to 0,591 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors, associate professors and professors moderately agree with our statement, PhD assistants less agree with statement 14. Through this result we can not say that there is relationship between academic status and the statement 14. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,555 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 14.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Through this result we cannot say that there is relationship between the number of articles and question 14. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,965 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 14.

For question 15:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and frequency and number of article published by academicans. P value is equal to 0,627 which is quite larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 15.

Generally academics moderately agree with publishing article about their topics constantly.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and professors moderately agree with our statement, PhD assistants disagree with statement 15. Associate professors agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 15. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,084 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 15.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 4 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 5 agrees with question 15 a lot. Through this result we cannot say that there is relationship between the number of articles and question 15. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,105 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 15.

For question 16:

According to one-way Anova test, the p value is 0,831 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 16 which is "I will end immediately innovation projects which i do not feel bringing a positive contribution to university and the surrounding.". Regardless of gender most academics moderately agree with statement 16.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants, associate professors and professors moderately agree with our statement, assistant professors agree with statement 16 a lot. Through this result we can not say that there is relationship between academic status and the statement 16. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,163 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 16.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 3 and 5 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 2 agrees with question 16 a lot. Group number 4 less agree with it. Through this result we cannot say that there is relationship between the number of articles and question 16. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,347 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 16.

For question 17:

The null hypothesis is that there is not a important relation between gender and statement 17 which is "I emphasize the importance of an innovative approach to all staff at the university.". According to one-way Anova, the p value is equal to 0,543 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors moderately agree with our statement, PhD assistants less agree with statement 17. Assistant professors and associate professors agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 17. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,020 which is less than our significance level 0,05. This result shows that our alternative hypothesis is acceptable which is there is significant relationship between academic status and statement 17.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 4 and 5 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 3 agrees with question 17 a lot. Through this result we cannot say that there is relationship between the number of articles and question 17. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,359 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 17.

For question 18:

According to one-way Anova test, the p value is 1,000 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation

between gender and statement 18 which is “I explain clearly the contribution to bring innovation to the university and all the school staff.”. The women and men academics’s answers mean is same and equal to 3,00, that mean shows moderately agreement.

It can be seen by examining the mean of answers that ongoing PhD Assistants and associate professors moderately agree with our statement, PhD assistants and professors less agree with statement 18. Assistant professors agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 18. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,112 which is more than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 18.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 3 agrees with question 18 a lot. Through this result we cannot say that there is relationship between the number of articles and question 18. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,521 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 18.

For question 19:

Academics tend to state their satisfaction with the achievements of innovative individuals in the university. P value is equal to 0,224 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and associate professors agree with our statement a lot, professors less agree with statement 19. Assistant professors totally agree with it. Through this result we can not say that there is relationship between academic status and the statement 19. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,021 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 19.



It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4 moderately agree with it. Through this result we cannot say that there is relationship between the number of articles and question 19. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,655 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 19.

For question 20:

One-way Anova test calculates the p value is 0,387 bigger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 20 which is "I show respect for the creative and innovative ideas of all university staff.". Regardless of gender most academics moderately agree with statement 20.

It can be seen by examining the mean of answers that ongoing PhD Assistants agree with our statement a lot, professors less agree with statement 20. PhD assistants, assistant professors and associate professors totally agree with it. Through this result we can not say that there is relationship between academic status and the statement 20. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,05 which is equal to our significance level 0,05. This result shows that our alternative hypothesis is acceptable which is there is significant relationship between academic status and statement 20.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 3, 4 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 1 moderately agrees with question 20 a lot. Group 2 totally agree with it. Through this result we cannot say that there is relationship between the number of articles and question 20. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,058 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 20.

For question 21:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 21 which is “I support innovative research and effort of all academic staff”. P value is equal to 0,649 which is quite larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 21. Generally academics moderately agree with publishing article about their topics constantly.

It can be seen by examining the mean of answers that PhD Assistants and professors moderately agree with our statement, ongoing PhD assistants, assistant professors and associate professors agree with statement 21 a lot. Through this result we can not say that there is relationship between academic status and the statement 21. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,175 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 21.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 2, 3, 4 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 1 moderately agrees with question 21. Through this result we cannot say that there is relationship between the number of articles and question 21. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,539 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 21.

For question 22:

There is almost the same number of academics who disagree with statement 22. The statement 22 is about to support and keep defending the academic staff of the university who advocates innovative ideas. One-way Anova test result “p” is equal to 0,442 and it is more than 0,05. By looking the one-way Anova test result, null hypothesis is accepted to be true, that means there is no meaningful relation between gender and statement 22.

It can be seen by examining the mean of answers that ongoing PhD Assistants and associate professors agree with our statement a lot, professors moderately agree with it, PhD assistants and assistant professors totally agree with statement 22. Through this

result we can not say that there is relationship between academic status and the statement 22. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,078 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 22.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 3, 4 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 1 modaretly agrees with question 22. Group 2 totally agree with it. Through this result we cannot say that there is relationship between the number of articles and question 22. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,099 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 22.

For question 23:

According to one-way Anova test, the p vlaue is 0,455 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 23 which is “when deciding, I adopt a common approach and consensus.”. Regardless of gender most academics modaretly agree with statement 23.

It can be seen by examining the mean of answers that ongoing PhD Assistants, associate professors and assistant professors agree with our statement a lot, professors modaretly agree with it, PhD assistants totally agree with statement 23. Through this result we can not say that there is relationship between academic status and the statement 23. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,173 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 23.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4modaretly agrees with question 23. Through this result we cannot say that there is relationship between the number of articles and question 23. As evidence to this result, we can show our one way Anova

test. Our p-value is equal to 0,566 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 23.

For question 24:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 24 which is “I ensure that university innovation hear as a means of enviromental integration and to adapt to the environment ”.P value is equal to 0,528 which is larger than 0,05. Null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and professors modaretly agree with our statement, assistant professors and associate professors agree with statement 24 a lot. Through this result we can not say that there is relationship between academic status and the statement 24. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,158 which is bigger than our significance level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 24.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2 and 3 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4 and 5 modaretly agree with question 24. Through this result we cannot say that there is relationship between the number of articles and question 24. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,770 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 24.

For question 25:

The null hypothesis is that there is not a important relation between gender and statement 25 which is “I set up the process of innovation in open communication with all the academic staff and students.”. According to one-way Anova, the p value is equal to 0,601 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that PhD Assistants and professors modaretly agree with our statement, associate professors and ongoing PhD assistants agree with it a lot, assistantprofessors totally agree with statement 25. Through this

result we can not say that there is relationship between academic status and the statement 25. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,008 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 25.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4 modaretly agrees with question 25. Through this result we cannot say that there is relationship between the number of articles and question 25. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,328 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 25.

For question 26:

According to one-way Anova test, the p vlaue is 0,845 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 26 which is "Creating strong bonds between all university staff I effort that innovation in the sense of ownership is dominant.". Regardless of gender most academics modaretly agree with statement 26.

It can be seen by examining the mean of answers that ongoing PhD Assistants and PhD assistants modaretly agree with our statement, associate professors and assistant professors agree with statement 26 a lot, professors less agree with it. Through this result we can not say that there is relationship between academic status and the statement 26. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,008 which is less than our significancy level 0,013. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 26.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 2 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 1, 3 and 4 modaretly agrees with question 26. Through this result we cannot say that there is relationship between the number of articles and question 26. As evidence to this result, we can show our one way Anova

test. Our p-value is equal to 0,629 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 26.

For question 27:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 27 that is “I listen to all the innovations of academic staff at the university.”. P value is equal to 0,301 which is quite larger than 0,05. Null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors modaretly agree with our statement, associate professors, PhD assistants and assistant professors agree with statement 27 a lot. Through this result we can not say that there is relationship between academic status and the statement 27. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,020 which is less than our significance level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 27.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2, 3 and 5 agree with question 27 a lot. Through this result we cannot say that there is relationship between the number of articles and question 27. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,245 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 27.

For question 28:

According to one-way Anova test, the p vlaue is 0,728 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 28 which is “I believe the innovation can comes from all academic staff at all level.”. Regardless of gender most academics modaretly agree with statement 28.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors modaretly agree with our statement, associate professors, PhD assistants and

assistant professors agree with statement 28 a lot. Through this result we can not say that there is relationship between academic status and the statement 28. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,002 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 28.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. Group number 4 modaretly agrees with question 28. Through this result we cannot say that there is relationship between the number of articles and question 28. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,378 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and question 28.

For question 29:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 29 that is “The risk of innovative academic projects, I always believe in taking a flier will return as earnings.”. P value is equal to 0,085 which is slightly bigger than 0,05. Null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and professors modaretly agree with our statement, assistant professors and associate professors agree with statement 29 a lot. Through this result we can not say that there is relationship between academic status and the statement 29. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,098 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 29.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2 and 3 agrees with question 29 a lot. Through this result we cannot say that there is relationship between the number of articles and question 29. As evidence to this result, we can show our one way Anova

test. Our p-value is equal to 0,486 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 29.

For question 30:

Academicians mostly agree with the idea which is paying attention to the process of innovation in the use of university resources in an efficient manner, and faculty members nearly give the same answer, they moderately agree with this statement and women and men scholars' answers mean is 3,71 and 3,91 orderly. One-way Anova test significance level is 0,562 which is more than 0,05. That is why null hypothesis is accepted. There is not significant relationship between gender and paying attention to the use of resources.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants, assistant professors and associate professors agree with our statement a lot, professors moderately agree with statement 30. Through this result we can not say that there is relationship between academic status and the statement 30. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,178 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 30.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 4. As we mentioned 4 means agreeing with statement a lot. So we can say that group number 4 moderately agrees with question 30 a lot. Through this result we cannot say that there is relationship between the number of articles and question 30. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,877 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 30.

For question 31:

According to one-way Anova test, the p value is 0,960 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 31 which is "I give priority to innovation that will



contribute to the development of the university.”. Regardless of gender most academics moderately agree with statement 31.

It can be seen by examining the mean of answers that ongoing PhD Assistants moderately agree with statement 31, PhD assistants, assistant professors and associate professors and professors agree with our statement a lot. Through this result we can not say that there is relationship between academic status and the statement 31. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,152 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 31.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 3 and 4 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 1, 2 and 5 agrees with question 31 a lot. Through this result we cannot say that there is relationship between the number of articles and question 31. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,363 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 31.

For question 32:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and frequency and statement 32 which is taking care of the selection of resources and tools to be used in the process of innovation show. P value is equal to 0,315 which is bigger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 32.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, PhD assistants and professors moderately agree with statement 32. Through this result we can not say that there is relationship between academic status and the statement 32. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,008 which is less than our significance level 0,05. This result shows that our alternative hypothesis is acceptable which is there is significant relationship between academic status and statement 32.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 2, 3 and 5 agrees with question 32 a lot. Through this result we cannot say that there is relationship between the number of articles and question 32. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,666 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 32.

For question 33:

According to one-way Anova test, the p value is 0,658 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 33 which is "I will be prepared for the unpredictable results of the innovation process at the university.". Regardless of gender most academics moderately agree with statement 33.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, PhD assistants and professors moderately agree with statement 33. Through this result we can not say that there is relationship between academic status and the statement 33. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,296 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and statement 33.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means moderately agreeing with statement. Group number 2, 3 and 5 agrees with question 33 a lot. Through this result we cannot say that there is relationship between the number of articles and question 33. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,622 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 33.

For question 34:

The null hypothesis is that there is not a important relation between gender and statement 34 which is “I will cost-benefit analysis of the benefits of innovation to the university.”. According to one-way Anova, the p value is equal to 0,935 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and associate professors modaretly agree with our statement, assistant professors agree with statement 34 a lot. Professors less agree with it. Through this result we can not say that there is relationship between academic status and the statement 34. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,089 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 34.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 3 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2 and 5 agrees with question 34 a lot. Through this result we cannot say that there is relationship between the number of articles and question 34. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,236 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 34.

For question 35:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and frequency and number of article published by academicans. Statement 35 is ”I contiunally observe the contributions to the academic staff in project management.”. P value is equal to 0,783 which is quite larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 35.

It can be seen by examining the mean of answers that ongoing PhD Assistants professors modaretly agree with our statement, assistant professors and associate professors agree with statement 35 a lot. PhD professors less agree with it. Through this result we can not say that there is relationship between academic status and the

statement 35. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,095 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 35.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2 and 3 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 4 less agrees with question 36 a lot. Group number 5 agrees with a lot. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,047 which is less than our significancy level 0,05. This result shows that our alternative hypothesis is acceptable which is there is significant relationship between academic status and question 4.

For question 36:

Statement 36 is "I support innovative projects to improve the co-operation of all the staff with each other.". Women and men scholars's answer mean is equal to orderly 3,87and 4,00. P value is equal to 0,702 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors, associate professors and professors agree with statement 36 a lot. PhD assistants totally agree with our statement. Through this result we can not say that there is relationship between academic status and the statement 36. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,121 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 36.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2, 3 and 5 agrees with question 36 a lot. Through this result we cannot say that there is relationship between the number of articles and question 36. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,065 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 36.

For question 37:

According to one-way Anova test, the p value is 0,185 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 37 which is “I direct students to innovative projects for academic year-end finishing projects.”. Regardless of gender most academics modaretly agree with statement 37.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, professors and PhD assistants modaretly agree with statement 37. Through this result we can not say that there is relationship between academic status and the statement 37. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,074 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 37.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2, 3 and 5 agrees with question 37 a lot. Through this result we cannot say that there is relationship between the number of articles and question 37. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,781 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 37.

For question 38:

Statement 38 is “I try to improve the rating scale to measure the effectiveness of innovation projects.”. P value is equal to 0,715 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, associate professors and professors modaretly agree with our statement, PhD assistants less agree with statement 38, assistant professors agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 38. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,090 which is bigger than our significancy level 0,05. This result shows that our null

hypotesis is acceptable which is there is no significant relationship between academic status and statement 38.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 2, 3 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 4 less agrees with question 38. Through this result we cannot say that there is relationship between the number of articles and question 38. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,431 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 38.

For question 39:

According to one-way Anova test, the p vlaue is 0,576 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 39 which is "I investigate academic networks of business partners.". Regardless of gender most academics modaretly agree with statement 39.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, professors modaretly agree with statement 39, PhD assistants less agree with it. Through this result we can not say that there is relationship between academic status and the statement 39. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,011 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 39.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 2 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 1, 3 and 5 agree with question 39 a lot. Through this result we cannot say that there is relationship between the number of articles and question 39. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,976 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 39.

For question 40:

The null hypothesis is that there is not a important relation between gender and statement 40 which is “I would intermediary in university academic joint ventures the transfer of new technologies to students.”. According to one-way Anova, the p value is equal to 0,094 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, PhD assistants and professors modaretly agree with our statement, assistantprofessors and associate professors agree with statement 40 a lot. Through this result we can not say that there is relationship between academic status and the statement 40. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,054 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 40.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2 and 3 agrees with question 40 a lot. Through this result we cannot say that there is relationship between the number of articles and question 40. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,717 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 40.

For question 41:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 41 which is “I support students' entrepreneurial applications in TUBITAK, Kosgeb support programs open to students from institutions.”. P value is equal to 0,938 which is quite larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 41.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, PhD assistants and professors modaretly agree with statement 41. Through this result we can not say that there is relationship between academic status and the statement 41. As an evidence to

this result, we can show our one way Anova test. Our p-value is equal to 0,013 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 41.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2, 3 and 5 agrees with question 41 a lot. Through this result we cannot say that there is relationship between the number of articles and question 41. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,611 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 41.

For question 42:

Statement 42 is “I will support the process of cooperation studies of university-industry collaboration towards the commercialization of innovation.”. Women and men scholars’s answer mean is equal to orderly 3,42and 3,26. P value is equal to 0,695 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors modaretly agree with our statement, associate professors and assistant professors agree with statement 42 a lot. Through this result we can not say that there is relationship between academic status and the statement 42. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,063 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 42.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2 agrees with question 42 a lot. Through this result we cannot say that there is relationship between the number of articles and question 42. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,873 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 42.



For question 43:

According to one-way Anova test, the p value is 0,871 a quite larger than 0,05; therefore, the null hypothesis is accepted to be true and there is not significant relation between gender and statement 43 which is “I spend the effort to participate in international academic co-operation networks.”. Regardless of gender most academics modaretly agree with statement 43.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors agree with our statement a lot, professors modaretly agree with statement 43, PhD assistants less agree with it. Through this result we can not say that there is relationship between academic status and the statement 43. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,017 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 43.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 3 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 1, 2 and 5 agrees with question 43 a lot. Through this result we cannot say that there is relationship between the number of articles and question 43. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,945 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 43.

For question 44:

The null hypothesis is that there is not a important relation between gender and statement 40 which is “I would follow e-business networks and social networks for innovation projects (LinkedIn, Facebook, etc.)”. According to one-way Anova, the p value is equal to 0,307 is bigger than 0,05; therefore the null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors modaretly agree with our statement, professors and PhD assistants less agree with statement 44. Through this result we can not say that there is relationship between academic status and the statement 44. As an evidence to

this result, we can show our one way Anova test. Our p-value is equal to 0,020 which is less than our significancy level 0,05. This result shows that our alternative hypotesis is acceptable which is there is significant relationship between academic status and statement 44.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1, 3, 4 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 2 agrees with question 44 a lot. Through this result we cannot say that there is relationship between the number of articles and question 44. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,436 which is bigger than our significancy level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 44.

For question 45:

It can be said by looking at the one-way Anova test result that there is not a significant relation between gender and statement 45 is " I would follow academics in the world of open online courses of international universities in order to follow innovation.". P value is equal to 0,533 which is quite larger than 0,05. Null hypothesis is accepted to be true that means there is not a significant relation between gender and statement 45.

It can be seen by examining the mean of answers that ongoing PhD Assistants, assistant professors and associate professors modaretly agree with our statement, professors less agree with statement 45, PhD assistants agree with it a lot. Through this result we can not say that there is relationship between academic status and the statement 45. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,716 which is bigger than our significancy level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 45.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 1 and 5 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 3 and 4 less agree with question 45. Group number 2 totally agrees with it. Through this result we cannot say that there is relationship between the number of articles and question 45. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,054 which is equal to

our significance level 0,05. This result shows that our alternative hypothesis is acceptable which is there is significant relationship between academic status and question 45.

For question46:

Statement 46 is “I attend international academic exchange programs for educational purposes only.”. Women and men scholars’s answer mean is equal to orderly 2,54 and 2,70. P value is equal to 0,706 is bigger that 0,05; that means null hypothesis is accepted to be true.

It can be seen by examining the mean of answers that ongoing PhD Assistants and professors less agree with statement 46, assistant professors and associate professors modaretly agree with our statement, PhD assistant disagree with it. Through this result we can not say that there is relationship between academic status and the statement 30. As an evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,137 which is bigger than our significance level 0,05. This result shows that our null hypotesis is acceptable which is there is no significant relationship between academic status and statement 46.

It can be seen by examining the mean of answers that the mean of answers which are given by the group number 2, 3 and 4 are which is closer to 3. As we mentioned 3 means modaretly agreeing with statement. Group number 1 and 5 less agree with question 46. Through this result we cannot say that there is relationship between the number of articles and question 46. As evidence to this result, we can show our one way Anova test. Our p-value is equal to 0,766 which is bigger than our significance level 0,05. This result shows that our null hypothesis is acceptable which is there is no significant relationship between academic status and question 46.

## 5. CONCLUSION

In this master thesis, we tried to measure and define the perceptions of academics about innovation. We have used the measurement scale which is developed by Bülbul(2012). We created a questionnaire which includes 62 questions in total. It has 2 categories. The first part includes 16 questions about demographic data about participants. Second part includes 46 questions about 5 different categories. These are; innovation strategy, input management, project management, organizational culture and structure and innovation follow-up strategies. We used one-way anova test to get results from our data.

We used gender, academic status and number of published paper as key factors in our one way anova test. We wonder that these factors are effective or not in the innovation perceptions of academic staff in universities.

As a result we found that these factors show different effects on our issue. Through the results, we can say that in all categories our participants generally agreed with our questions. In input management part the participants agreement degree is between less and normal. In innovation strategy and innovation follow-up strategies degree is between normal and much agreement degree. In organizational culture and structure and project management categories, degree is between much and definitely agreement degree. Generally our factors did not create a significant difference and generally there is no significant relationship between our categories and factors.

At the end of study we get that the perception of academics is in normal levels, not less but no much. In this manner, as a heuristic; actually the academics in Turkey have a higher level of innovation perception but they do not recognize it. Also our aim was to measure this perception level. Another issue about our study is the distribution of different academic status of participants. The number of participants who are still making PhD are more than number of professors. Through that innovation perception of our participants are in moderate level. May be we can conclude higher level of perception when we apply our questionnaire to more professors.

As an acknowledgement we can apply this questionnaire more academics in different universities in Turkey and all over the world. Also we can change our factors that may affect the issue.

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Giriřimci ve Yenilikçi Üniversite

Endeksi(<http://haber.tobb.org.tr/ekonomikforum/2012/11/042-045.pdf>)

**APPENDIX-1**

**ANOVA**

|      |                | Sum of Squares | df | Mean Square | F      | Sig. |
|------|----------------|----------------|----|-------------|--------|------|
|      | Between Groups | 2,409          | 1  | 2,409       | ,844   | ,363 |
| DQ7  | Within Groups  | 128,442        | 45 | 2,854       |        |      |
|      | Total          | 130,851        | 46 |             |        |      |
|      | Between Groups | ,024           | 1  | ,024        | ,006   | ,941 |
| DQ8  | Within Groups  | 196,784        | 45 | 4,373       |        |      |
|      | Total          | 196,809        | 46 |             |        |      |
|      | Between Groups | 2,039          | 1  | 2,039       | 3,850  | ,056 |
| DQ9  | Within Groups  | 23,833         | 45 | ,530        |        |      |
|      | Total          | 25,872         | 46 |             |        |      |
|      | Between Groups | ,200           | 1  | ,200        | ,066   | ,799 |
| DQ10 | Within Groups  | 136,609        | 45 | 3,036       |        |      |
|      | Total          | 136,809        | 46 |             |        |      |
|      | Between Groups | 3,562          | 1  | 3,562       | 1,837  | ,182 |
| DQ11 | Within Groups  | 87,246         | 45 | 1,939       |        |      |
|      | Total          | 90,809         | 46 |             |        |      |
|      | Between Groups | 1,406          | 1  | 1,406       | ,647   | ,425 |
| DQ12 | Within Groups  | 97,828         | 45 | 2,174       |        |      |
|      | Total          | 99,234         | 46 |             |        |      |
|      | Between Groups | 9,406          | 1  | 9,406       | 10,182 | ,003 |
| DQ13 | Within Groups  | 41,572         | 45 | ,924        |        |      |
|      | Total          | 50,979         | 46 |             |        |      |
|      | Between Groups | ,121           | 1  | ,121        | ,147   | ,703 |
| DQ14 | Within Groups  | 36,986         | 45 | ,822        |        |      |
|      | Total          | 37,106         | 46 |             |        |      |
|      | Between Groups | 1,900          | 1  | 1,900       | 1,481  | ,230 |
| DQ15 | Within Groups  | 57,717         | 45 | 1,283       |        |      |
|      | Total          | 59,617         | 46 |             |        |      |
|      | Between Groups | ,134           | 1  | ,134        | ,105   | ,748 |
| DQ16 | Within Groups  | 57,611         | 45 | 1,280       |        |      |
|      | Total          | 57,745         | 46 |             |        |      |
|      | Between Groups | 1,235          | 1  | 1,235       | ,752   | ,390 |
| GQ1  | Within Groups  | 73,871         | 45 | 1,642       |        |      |
|      | Total          | 75,106         | 46 |             |        |      |
|      | Between Groups | 1,951          | 1  | 1,951       | 1,194  | ,280 |
| GQ2  | Within Groups  | 73,538         | 45 | 1,634       |        |      |
|      | Total          | 75,489         | 46 |             |        |      |
|      | Between Groups | ,134           | 1  | ,134        | ,084   | ,773 |
| GQ3  | Within Groups  | 71,611         | 45 | 1,591       |        |      |

|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Total          | 71,745 | 46 |       |       |      |
|     | Between Groups | 4,995  | 1  | 4,995 | 3,156 | ,082 |
| GQ4 | Within Groups  | 71,217 | 45 | 1,583 |       |      |
|     | Total          | 76,213 | 46 |       |       |      |
|     | Between Groups | 4,508  | 1  | 4,508 | 2,277 | ,138 |
| GQ5 | Within Groups  | 89,109 | 45 | 1,980 |       |      |
|     | Total          | 93,617 | 46 |       |       |      |
|     | Between Groups | ,501   | 1  | ,501  | ,355  | ,554 |
| GQ6 | Within Groups  | 63,457 | 45 | 1,410 |       |      |
|     | Total          | 63,957 | 46 |       |       |      |
|     | Between Groups | ,089   | 1  | ,089  | ,050  | ,824 |
| GQ8 | Within Groups  | 79,826 | 45 | 1,774 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
|     | Between Groups | 2,165  | 1  | 2,165 | 1,326 | ,256 |
| GQ7 | Within Groups  | 73,495 | 45 | 1,633 |       |      |
|     | Total          | 75,660 | 46 |       |       |      |
|     | Between Groups | 1,127  | 1  | 1,127 | ,765  | ,386 |
| GQ9 | Within Groups  | 66,277 | 45 | 1,473 |       |      |
|     | Total          | 67,404 | 46 |       |       |      |
|     | Between Groups | 3,873  | 1  | 3,873 | 2,646 | ,111 |
| YQ1 | Within Groups  | 65,871 | 45 | 1,464 |       |      |
|     | Total          | 69,745 | 46 |       |       |      |
|     | Between Groups | ,555   | 1  | ,555  | ,447  | ,507 |
| YQ2 | Within Groups  | 55,913 | 45 | 1,243 |       |      |
|     | Total          | 56,468 | 46 |       |       |      |
|     | Between Groups | ,200   | 1  | ,200  | ,144  | ,706 |
| YQ3 | Within Groups  | 62,609 | 45 | 1,391 |       |      |
|     | Total          | 62,809 | 46 |       |       |      |
|     | Between Groups | 4,147  | 1  | 4,147 | 2,339 | ,133 |
| YQ4 | Within Groups  | 79,768 | 45 | 1,773 |       |      |
|     | Total          | 83,915 | 46 |       |       |      |
|     | Between Groups | ,537   | 1  | ,537  | ,293  | ,591 |
| YQ5 | Within Groups  | 82,442 | 45 | 1,832 |       |      |
|     | Total          | 82,979 | 46 |       |       |      |
|     | Between Groups | ,326   | 1  | ,326  | ,239  | ,627 |
| YQ6 | Within Groups  | 61,333 | 45 | 1,363 |       |      |
|     | Total          | 61,660 | 46 |       |       |      |
|     | Between Groups | ,082   | 1  | ,082  | ,046  | ,831 |
| YQ7 | Within Groups  | 79,833 | 45 | 1,774 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
| OQ1 | Between Groups | ,583   | 1  | ,583  | ,376  | ,543 |

|     |                |        |    |       |       |       |
|-----|----------------|--------|----|-------|-------|-------|
|     | Within Groups  | 69,842 | 45 | 1,552 |       |       |
|     | Total          | 70,426 | 46 |       |       |       |
|     | Between Groups | ,000   | 1  | ,000  | ,000  | 1,000 |
| OQ2 | Within Groups  | 78,000 | 45 | 1,733 |       |       |
|     | Total          | 78,000 | 46 |       |       |       |
|     | Between Groups | 2,428  | 1  | 2,428 | 1,522 | ,224  |
| OQ3 | Within Groups  | 71,784 | 45 | 1,595 |       |       |
|     | Total          | 74,213 | 46 |       |       |       |
|     | Between Groups | 1,049  | 1  | 1,049 | ,763  | ,387  |
| OQ4 | Within Groups  | 61,929 | 45 | 1,376 |       |       |
|     | Total          | 62,979 | 46 |       |       |       |
|     | Between Groups | ,305   | 1  | ,305  | ,210  | ,649  |
| OQ5 | Within Groups  | 65,567 | 45 | 1,457 |       |       |
|     | Total          | 65,872 | 46 |       |       |       |
|     | Between Groups | ,766   | 1  | ,766  | ,603  | ,442  |
| OQ6 | Within Groups  | 57,234 | 45 | 1,272 |       |       |
|     | Total          | 58,000 | 46 |       |       |       |
|     | Between Groups | ,745   | 1  | ,745  | ,569  | ,455  |
| PQ1 | Within Groups  | 58,915 | 45 | 1,309 |       |       |
|     | Total          | 59,660 | 46 |       |       |       |
|     | Between Groups | ,441   | 1  | ,441  | ,404  | ,528  |
| PQ2 | Within Groups  | 49,176 | 45 | 1,093 |       |       |
|     | Total          | 49,617 | 46 |       |       |       |
|     | Between Groups | ,363   | 1  | ,363  | ,277  | ,601  |
| PQ3 | Within Groups  | 58,871 | 45 | 1,308 |       |       |
|     | Total          | 59,234 | 46 |       |       |       |
|     | Between Groups | ,062   | 1  | ,062  | ,039  | ,845  |
| PQ4 | Within Groups  | 71,768 | 45 | 1,595 |       |       |
|     | Total          | 71,830 | 46 |       |       |       |
|     | Between Groups | 1,557  | 1  | 1,557 | 1,094 | ,301  |
| PQ5 | Within Groups  | 64,060 | 45 | 1,424 |       |       |
|     | Total          | 65,617 | 46 |       |       |       |
|     | Between Groups | ,173   | 1  | ,173  | ,122  | ,728  |
| PQ6 | Within Groups  | 63,784 | 45 | 1,417 |       |       |
|     | Total          | 63,957 | 46 |       |       |       |
|     | Between Groups | 3,219  | 1  | 3,219 | 3,108 | ,085  |
| PQ7 | Within Groups  | 46,611 | 45 | 1,036 |       |       |
|     | Total          | 49,830 | 46 |       |       |       |
|     | Between Groups | ,492   | 1  | ,492  | ,342  | ,562  |
| PQ8 | Within Groups  | 64,784 | 45 | 1,440 |       |       |
|     | Total          | 65,277 | 46 |       |       |       |

|      |                |        |    |       |       |      |
|------|----------------|--------|----|-------|-------|------|
|      | Between Groups | ,003   | 1  | ,003  | ,003  | ,960 |
| PQ9  | Within Groups  | 55,103 | 45 | 1,225 |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | 1,235  | 1  | 1,235 | 1,032 | ,315 |
| PQ10 | Within Groups  | 53,871 | 45 | 1,197 |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | ,253   | 1  | ,253  | ,198  | ,658 |
| PQ11 | Within Groups  | 57,364 | 45 | 1,275 |       |      |
|      | Total          | 57,617 | 46 |       |       |      |
|      | Between Groups | ,010   | 1  | ,010  | ,007  | ,935 |
| PQ12 | Within Groups  | 66,203 | 45 | 1,471 |       |      |
|      | Total          | 66,213 | 46 |       |       |      |
|      | Between Groups | ,112   | 1  | ,112  | ,077  | ,783 |
| PQ13 | Within Groups  | 65,717 | 45 | 1,460 |       |      |
|      | Total          | 65,830 | 46 |       |       |      |
|      | Between Groups | ,200   | 1  | ,200  | ,148  | ,702 |
| PQ14 | Within Groups  | 60,609 | 45 | 1,347 |       |      |
|      | Total          | 60,809 | 46 |       |       |      |
|      | Between Groups | 2,004  | 1  | 2,004 | 1,810 | ,185 |
| PQ15 | Within Groups  | 49,826 | 45 | 1,107 |       |      |
|      | Total          | 51,830 | 46 |       |       |      |
|      | Between Groups | ,189   | 1  | ,189  | ,135  | ,715 |
| PQ16 | Within Groups  | 62,790 | 45 | 1,395 |       |      |
|      | Total          | 62,979 | 46 |       |       |      |
|      | Between Groups | ,433   | 1  | ,433  | ,318  | ,576 |
| IQ1  | Within Groups  | 61,312 | 45 | 1,362 |       |      |
|      | Total          | 61,745 | 46 |       |       |      |
|      | Between Groups | 3,898  | 1  | 3,898 | 2,933 | ,094 |
| IQ2  | Within Groups  | 59,804 | 45 | 1,329 |       |      |
|      | Total          | 63,702 | 46 |       |       |      |
|      | Between Groups | ,010   | 1  | ,010  | ,006  | ,938 |
| IQ3  | Within Groups  | 72,203 | 45 | 1,605 |       |      |
|      | Total          | 72,213 | 46 |       |       |      |
|      | Between Groups | ,285   | 1  | ,285  | ,156  | ,695 |
| IQ4  | Within Groups  | 82,268 | 45 | 1,828 |       |      |
|      | Total          | 82,553 | 46 |       |       |      |
|      | Between Groups | ,045   | 1  | ,045  | ,027  | ,871 |
| IQ5  | Within Groups  | 75,572 | 45 | 1,679 |       |      |
|      | Total          | 75,617 | 46 |       |       |      |
|      | Between Groups | 2,129  | 1  | 2,129 | 1,066 | ,307 |
| IQ6  | Within Groups  | 89,871 | 45 | 1,997 |       |      |

|     |                |        |    |       |      |      |
|-----|----------------|--------|----|-------|------|------|
|     | Total          | 92,000 | 46 |       |      |      |
|     | Between Groups | ,713   | 1  | ,713  | ,395 | ,533 |
| IQ7 | Within Groups  | 81,159 | 45 | 1,804 |      |      |
|     | Total          | 81,872 | 46 |       |      |      |
|     | Between Groups | ,278   | 1  | ,278  | ,144 | ,706 |
| IQ8 | Within Groups  | 86,828 | 45 | 1,930 |      |      |
|     | Total          | 87,106 | 46 |       |      |      |

**APPENDIX-2**

**ANOVA**

|      |                | Sum of Squares | df | Mean Square | F     | Sig. |
|------|----------------|----------------|----|-------------|-------|------|
|      | Between Groups | 14,920         | 4  | 3,730       | 1,351 | ,267 |
| DQ7  | Within Groups  | 115,931        | 42 | 2,760       |       |      |
|      | Total          | 130,851        | 46 |             |       |      |
|      | Between Groups | 12,005         | 4  | 3,001       | ,682  | ,608 |
| DQ8  | Within Groups  | 184,804        | 42 | 4,400       |       |      |
|      | Total          | 196,809        | 46 |             |       |      |
|      | Between Groups | 3,755          | 4  | ,939        | 1,782 | ,150 |
| DQ9  | Within Groups  | 22,118         | 42 | ,527        |       |      |
|      | Total          | 25,872         | 46 |             |       |      |
|      | Between Groups | 14,008         | 4  | 3,502       | 1,198 | ,326 |
| DQ10 | Within Groups  | 122,800        | 42 | 2,924       |       |      |
|      | Total          | 136,809        | 46 |             |       |      |
|      | Between Groups | 6,097          | 4  | 1,524       | ,756  | ,560 |
| DQ11 | Within Groups  | 84,712         | 42 | 2,017       |       |      |
|      | Total          | 90,809         | 46 |             |       |      |
|      | Between Groups | 7,847          | 4  | 1,962       | ,902  | ,472 |
| DQ12 | Within Groups  | 91,387         | 42 | 2,176       |       |      |
|      | Total          | 99,234         | 46 |             |       |      |
|      | Between Groups | ,375           | 4  | ,094        | ,078  | ,989 |
| DQ13 | Within Groups  | 50,604         | 42 | 1,205       |       |      |
|      | Total          | 50,979         | 46 |             |       |      |
|      | Between Groups | 2,267          | 4  | ,567        | ,683  | ,608 |
| DQ14 | Within Groups  | 34,839         | 42 | ,830        |       |      |
|      | Total          | 37,106         | 46 |             |       |      |
|      | Between Groups | 1,464          | 4  | ,366        | ,264  | ,899 |
| DQ15 | Within Groups  | 58,153         | 42 | 1,385       |       |      |
|      | Total          | 59,617         | 46 |             |       |      |
|      | Between Groups | 4,709          | 4  | 1,177       | ,932  | ,455 |
| DQ16 | Within Groups  | 53,036         | 42 | 1,263       |       |      |
|      | Total          | 57,745         | 46 |             |       |      |
|      | Between Groups | 8,822          | 4  | 2,206       | 1,397 | ,251 |
| GQ1  | Within Groups  | 66,284         | 42 | 1,578       |       |      |
|      | Total          | 75,106         | 46 |             |       |      |
|      | Between Groups | 8,101          | 4  | 2,025       | 1,262 | ,300 |
| GQ2  | Within Groups  | 67,388         | 42 | 1,604       |       |      |
|      | Total          | 75,489         | 46 |             |       |      |
|      | Between Groups | 2,343          | 4  | ,586        | ,354  | ,839 |
| GQ3  | Within Groups  | 69,402         | 42 | 1,652       |       |      |

|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Total          | 71,745 | 46 |       |       |      |
|     | Between Groups | 5,762  | 4  | 1,440 | ,859  | ,497 |
| GQ4 | Within Groups  | 70,451 | 42 | 1,677 |       |      |
|     | Total          | 76,213 | 46 |       |       |      |
|     | Between Groups | 4,454  | 4  | 1,114 | ,525  | ,718 |
| GQ5 | Within Groups  | 89,163 | 42 | 2,123 |       |      |
|     | Total          | 93,617 | 46 |       |       |      |
|     | Between Groups | 2,707  | 4  | ,677  | ,464  | ,762 |
| GQ6 | Within Groups  | 61,250 | 42 | 1,458 |       |      |
|     | Total          | 63,957 | 46 |       |       |      |
|     | Between Groups | 16,228 | 4  | 4,057 | 2,867 | ,035 |
| GQ7 | Within Groups  | 59,431 | 42 | 1,415 |       |      |
|     | Total          | 75,660 | 46 |       |       |      |
|     | Between Groups | 10,703 | 4  | 2,676 | 1,624 | ,186 |
| GQ8 | Within Groups  | 69,212 | 42 | 1,648 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
|     | Between Groups | 14,600 | 4  | 3,650 | 2,903 | ,033 |
| GQ9 | Within Groups  | 52,804 | 42 | 1,257 |       |      |
|     | Total          | 67,404 | 46 |       |       |      |
|     | Between Groups | 8,258  | 4  | 2,065 | 1,410 | ,247 |
| YQ1 | Within Groups  | 61,487 | 42 | 1,464 |       |      |
|     | Total          | 69,745 | 46 |       |       |      |
|     | Between Groups | 8,787  | 4  | 2,197 | 1,935 | ,122 |
| YQ2 | Within Groups  | 47,681 | 42 | 1,135 |       |      |
|     | Total          | 56,468 | 46 |       |       |      |
|     | Between Groups | 5,273  | 4  | 1,318 | ,962  | ,438 |
| YQ3 | Within Groups  | 57,536 | 42 | 1,370 |       |      |
|     | Total          | 62,809 | 46 |       |       |      |
|     | Between Groups | 7,311  | 4  | 1,828 | 1,002 | ,417 |
| YQ4 | Within Groups  | 76,604 | 42 | 1,824 |       |      |
|     | Total          | 83,915 | 46 |       |       |      |
|     | Between Groups | 5,621  | 4  | 1,405 | ,763  | ,555 |
| YQ5 | Within Groups  | 77,358 | 42 | 1,842 |       |      |
|     | Total          | 82,979 | 46 |       |       |      |
|     | Between Groups | 10,722 | 4  | 2,681 | 2,210 | ,084 |
| YQ6 | Within Groups  | 50,938 | 42 | 1,213 |       |      |
|     | Total          | 61,660 | 46 |       |       |      |
|     | Between Groups | 11,263 | 4  | 2,816 | 1,723 | ,163 |
| YQ7 | Within Groups  | 68,652 | 42 | 1,635 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
| OQ1 | Between Groups | 16,723 | 4  | 4,181 | 3,270 | ,020 |



|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Within Groups  | 53,702 | 42 | 1,279 |       |      |
|     | Total          | 70,426 | 46 |       |       |      |
|     | Between Groups | 12,464 | 4  | 3,116 | 1,997 | ,112 |
| OQ2 | Within Groups  | 65,536 | 42 | 1,560 |       |      |
|     | Total          | 78,000 | 46 |       |       |      |
|     | Between Groups | 17,491 | 4  | 4,373 | 3,238 | ,021 |
| OQ3 | Within Groups  | 56,722 | 42 | 1,351 |       |      |
|     | Total          | 74,213 | 46 |       |       |      |
|     | Between Groups | 18,473 | 4  | 4,618 | 4,358 | ,005 |
| OQ4 | Within Groups  | 44,506 | 42 | 1,060 |       |      |
|     | Total          | 62,979 | 46 |       |       |      |
|     | Between Groups | 9,033  | 4  | 2,258 | 1,669 | ,175 |
| OQ5 | Within Groups  | 56,839 | 42 | 1,353 |       |      |
|     | Total          | 65,872 | 46 |       |       |      |
|     | Between Groups | 10,304 | 4  | 2,576 | 2,268 | ,078 |
| OQ6 | Within Groups  | 47,696 | 42 | 1,136 |       |      |
|     | Total          | 58,000 | 46 |       |       |      |
|     | Between Groups | 8,213  | 4  | 2,053 | 1,676 | ,173 |
| PQ1 | Within Groups  | 51,446 | 42 | 1,225 |       |      |
|     | Total          | 59,660 | 46 |       |       |      |
|     | Between Groups | 7,068  | 4  | 1,767 | 1,744 | ,158 |
| PQ2 | Within Groups  | 42,549 | 42 | 1,013 |       |      |
|     | Total          | 49,617 | 46 |       |       |      |
|     | Between Groups | 16,228 | 4  | 4,057 | 3,962 | ,008 |
| PQ3 | Within Groups  | 43,006 | 42 | 1,024 |       |      |
|     | Total          | 59,234 | 46 |       |       |      |
|     | Between Groups | 18,305 | 4  | 4,576 | 3,591 | ,013 |
| PQ4 | Within Groups  | 53,525 | 42 | 1,274 |       |      |
|     | Total          | 71,830 | 46 |       |       |      |
|     | Between Groups | 15,581 | 4  | 3,895 | 3,270 | ,020 |
| PQ5 | Within Groups  | 50,036 | 42 | 1,191 |       |      |
|     | Total          | 65,617 | 46 |       |       |      |
|     | Between Groups | 20,889 | 4  | 5,222 | 5,093 | ,002 |
| PQ6 | Within Groups  | 43,069 | 42 | 1,025 |       |      |
|     | Total          | 63,957 | 46 |       |       |      |
|     | Between Groups | 8,294  | 4  | 2,074 | 2,097 | ,098 |
| PQ7 | Within Groups  | 41,536 | 42 | ,989  |       |      |
|     | Total          | 49,830 | 46 |       |       |      |
|     | Between Groups | 8,888  | 4  | 2,222 | 1,655 | ,178 |
| PQ8 | Within Groups  | 56,388 | 42 | 1,343 |       |      |
|     | Total          | 65,277 | 46 |       |       |      |

|      |                |        |    |       |       |      |
|------|----------------|--------|----|-------|-------|------|
|      | Between Groups | 7,974  | 4  | 1,994 | 1,776 | ,152 |
| PQ9  | Within Groups  | 47,132 | 42 | 1,122 |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | 15,051 | 4  | 3,763 | 3,946 | ,008 |
| PQ10 | Within Groups  | 40,055 | 42 | ,954  |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | 6,229  | 4  | 1,557 | 1,273 | ,296 |
| PQ11 | Within Groups  | 51,388 | 42 | 1,224 |       |      |
|      | Total          | 57,617 | 46 |       |       |      |
|      | Between Groups | 11,326 | 4  | 2,831 | 2,167 | ,089 |
| PQ12 | Within Groups  | 54,887 | 42 | 1,307 |       |      |
|      | Total          | 66,213 | 46 |       |       |      |
|      | Between Groups | 11,055 | 4  | 2,764 | 2,119 | ,095 |
| PQ13 | Within Groups  | 54,775 | 42 | 1,304 |       |      |
|      | Total          | 65,830 | 46 |       |       |      |
|      | Between Groups | 9,490  | 4  | 2,372 | 1,942 | ,121 |
| PQ14 | Within Groups  | 51,319 | 42 | 1,222 |       |      |
|      | Total          | 60,809 | 46 |       |       |      |
|      | Between Groups | 9,324  | 4  | 2,331 | 2,303 | ,074 |
| PQ15 | Within Groups  | 42,506 | 42 | 1,012 |       |      |
|      | Total          | 51,830 | 46 |       |       |      |
|      | Between Groups | 10,737 | 4  | 2,684 | 2,158 | ,090 |
| PQ16 | Within Groups  | 52,241 | 42 | 1,244 |       |      |
|      | Total          | 62,979 | 46 |       |       |      |
|      | Between Groups | 16,127 | 4  | 4,032 | 3,712 | ,011 |
| IQ1  | Within Groups  | 45,618 | 42 | 1,086 |       |      |
|      | Total          | 61,745 | 46 |       |       |      |
|      | Between Groups | 12,372 | 4  | 3,093 | 2,531 | ,054 |
| IQ2  | Within Groups  | 51,330 | 42 | 1,222 |       |      |
|      | Total          | 63,702 | 46 |       |       |      |
|      | Between Groups | 18,540 | 4  | 4,635 | 3,627 | ,013 |
| IQ3  | Within Groups  | 53,673 | 42 | 1,278 |       |      |
|      | Total          | 72,213 | 46 |       |       |      |
|      | Between Groups | 15,470 | 4  | 3,867 | 2,421 | ,063 |
| IQ4  | Within Groups  | 67,083 | 42 | 1,597 |       |      |
|      | Total          | 82,553 | 46 |       |       |      |
|      | Between Groups | 18,465 | 4  | 4,616 | 3,392 | ,017 |
| IQ5  | Within Groups  | 57,152 | 42 | 1,361 |       |      |
|      | Total          | 75,617 | 46 |       |       |      |
|      | Between Groups | 21,858 | 4  | 5,464 | 3,272 | ,020 |
| IQ6  | Within Groups  | 70,142 | 42 | 1,670 |       |      |

|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Total          | 92,000 | 46 |       |       |      |
|     | Between Groups | 3,921  | 4  | ,980  | ,528  | ,716 |
| IQ7 | Within Groups  | 77,951 | 42 | 1,856 |       |      |
|     | Total          | 81,872 | 46 |       |       |      |
|     | Between Groups | 13,057 | 4  | 3,264 | 1,852 | ,137 |
| IQ8 | Within Groups  | 74,049 | 42 | 1,763 |       |      |
|     | Total          | 87,106 | 46 |       |       |      |

**APPENDIX-3**

**ANOVA**

|      |                | Sum of Squares | df | Mean Square | F     | Sig. |
|------|----------------|----------------|----|-------------|-------|------|
|      | Between Groups | 7,518          | 4  | 1,879       | ,640  | ,637 |
| DQ7  | Within Groups  | 123,333        | 42 | 2,937       |       |      |
|      | Total          | 130,851        | 46 |             |       |      |
|      | Between Groups | 18,667         | 4  | 4,667       | 1,100 | ,369 |
| DQ8  | Within Groups  | 178,141        | 42 | 4,241       |       |      |
|      | Total          | 196,809        | 46 |             |       |      |
|      | Between Groups | 1,708          | 4  | ,427        | ,742  | ,569 |
| DQ9  | Within Groups  | 24,164         | 42 | ,575        |       |      |
|      | Total          | 25,872         | 46 |             |       |      |
|      | Between Groups | 49,375         | 4  | 12,344      | 5,930 | ,001 |
| DQ10 | Within Groups  | 87,433         | 42 | 2,082       |       |      |
|      | Total          | 136,809        | 46 |             |       |      |
|      | Between Groups | 25,183         | 4  | 6,296       | 4,029 | ,007 |
| DQ11 | Within Groups  | 65,626         | 42 | 1,563       |       |      |
|      | Total          | 90,809         | 46 |             |       |      |
|      | Between Groups | 28,443         | 4  | 7,111       | 4,219 | ,006 |
| DQ12 | Within Groups  | 70,791         | 42 | 1,686       |       |      |
|      | Total          | 99,234         | 46 |             |       |      |
|      | Between Groups | 5,449          | 4  | 1,362       | 1,257 | ,302 |
| DQ13 | Within Groups  | 45,529         | 42 | 1,084       |       |      |
|      | Total          | 50,979         | 46 |             |       |      |
|      | Between Groups | 3,735          | 4  | ,934        | 1,175 | ,336 |
| DQ14 | Within Groups  | 33,372         | 42 | ,795        |       |      |
|      | Total          | 37,106         | 46 |             |       |      |
|      | Between Groups | 10,594         | 4  | 2,648       | 2,269 | ,078 |
| DQ15 | Within Groups  | 49,023         | 42 | 1,167       |       |      |
|      | Total          | 59,617         | 46 |             |       |      |
|      | Between Groups | 3,068          | 4  | ,767        | ,589  | ,672 |
| DQ16 | Within Groups  | 54,677         | 42 | 1,302       |       |      |
|      | Total          | 57,745         | 46 |             |       |      |
|      | Between Groups | 10,654         | 4  | 2,663       | 1,736 | ,160 |
| GQ1  | Within Groups  | 64,453         | 42 | 1,535       |       |      |
|      | Total          | 75,106         | 46 |             |       |      |
|      | Between Groups | 2,294          | 4  | ,574        | ,329  | ,857 |
| GQ2  | Within Groups  | 73,195         | 42 | 1,743       |       |      |
|      | Total          | 75,489         | 46 |             |       |      |
|      | Between Groups | 2,011          | 4  | ,503        | ,303  | ,874 |
| GQ3  | Within Groups  | 69,733         | 42 | 1,660       |       |      |

|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Total          | 71,745 | 46 |       |       |      |
|     | Between Groups | 7,383  | 4  | 1,846 | 1,126 | ,357 |
| GQ4 | Within Groups  | 68,829 | 42 | 1,639 |       |      |
|     | Total          | 76,213 | 46 |       |       |      |
|     | Between Groups | 4,980  | 4  | 1,245 | ,590  | ,672 |
| GQ5 | Within Groups  | 88,637 | 42 | 2,110 |       |      |
|     | Total          | 93,617 | 46 |       |       |      |
|     | Between Groups | 1,265  | 4  | ,316  | ,212  | ,930 |
| GQ6 | Within Groups  | 62,692 | 42 | 1,493 |       |      |
|     | Total          | 63,957 | 46 |       |       |      |
|     | Between Groups | 3,388  | 4  | ,847  | ,492  | ,741 |
| GQ7 | Within Groups  | 72,272 | 42 | 1,721 |       |      |
|     | Total          | 75,660 | 46 |       |       |      |
|     | Between Groups | 3,482  | 4  | ,870  | ,478  | ,751 |
| GQ8 | Within Groups  | 76,433 | 42 | 1,820 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
|     | Between Groups | 5,721  | 4  | 1,430 | ,974  | ,432 |
| GQ9 | Within Groups  | 61,683 | 42 | 1,469 |       |      |
|     | Total          | 67,404 | 46 |       |       |      |
|     | Between Groups | 6,142  | 4  | 1,536 | 1,014 | ,411 |
| YQ1 | Within Groups  | 63,603 | 42 | 1,514 |       |      |
|     | Total          | 69,745 | 46 |       |       |      |
|     | Between Groups | ,419   | 4  | ,105  | ,079  | ,988 |
| YQ2 | Within Groups  | 56,049 | 42 | 1,334 |       |      |
|     | Total          | 56,468 | 46 |       |       |      |
|     | Between Groups | ,760   | 4  | ,190  | ,129  | ,971 |
| YQ3 | Within Groups  | 62,049 | 42 | 1,477 |       |      |
|     | Total          | 62,809 | 46 |       |       |      |
|     | Between Groups | 7,988  | 4  | 1,997 | 1,105 | ,367 |
| YQ4 | Within Groups  | 75,927 | 42 | 1,808 |       |      |
|     | Total          | 83,915 | 46 |       |       |      |
|     | Between Groups | 3,265  | 4  | ,816  | ,430  | ,786 |
| YQ5 | Within Groups  | 79,714 | 42 | 1,898 |       |      |
|     | Total          | 82,979 | 46 |       |       |      |
|     | Between Groups | 8,419  | 4  | 2,105 | 1,660 | ,177 |
| YQ6 | Within Groups  | 53,241 | 42 | 1,268 |       |      |
|     | Total          | 61,660 | 46 |       |       |      |
|     | Between Groups | 3,515  | 4  | ,879  | ,483  | ,748 |
| YQ7 | Within Groups  | 76,400 | 42 | 1,819 |       |      |
|     | Total          | 79,915 | 46 |       |       |      |
| OQ1 | Between Groups | 4,056  | 4  | 1,014 | ,642  | ,636 |

|     |                |        |    |       |       |      |
|-----|----------------|--------|----|-------|-------|------|
|     | Within Groups  | 66,369 | 42 | 1,580 |       |      |
|     | Total          | 70,426 | 46 |       |       |      |
|     | Between Groups | 1,459  | 4  | ,365  | ,200  | ,937 |
| OQ2 | Within Groups  | 76,541 | 42 | 1,822 |       |      |
|     | Total          | 78,000 | 46 |       |       |      |
|     | Between Groups | 3,095  | 4  | ,774  | ,457  | ,767 |
| OQ3 | Within Groups  | 71,118 | 42 | 1,693 |       |      |
|     | Total          | 74,213 | 46 |       |       |      |
|     | Between Groups | 5,257  | 4  | 1,314 | ,956  | ,441 |
| OQ4 | Within Groups  | 57,722 | 42 | 1,374 |       |      |
|     | Total          | 62,979 | 46 |       |       |      |
|     | Between Groups | 4,024  | 4  | 1,006 | ,683  | ,608 |
| OQ5 | Within Groups  | 61,849 | 42 | 1,473 |       |      |
|     | Total          | 65,872 | 46 |       |       |      |
|     | Between Groups | 2,624  | 4  | ,656  | ,498  | ,738 |
| OQ6 | Within Groups  | 55,376 | 42 | 1,318 |       |      |
|     | Total          | 58,000 | 46 |       |       |      |
|     | Between Groups | 5,630  | 4  | 1,408 | 1,094 | ,372 |
| PQ1 | Within Groups  | 54,029 | 42 | 1,286 |       |      |
|     | Total          | 59,660 | 46 |       |       |      |
|     | Between Groups | 2,088  | 4  | ,522  | ,461  | ,764 |
| PQ2 | Within Groups  | 47,529 | 42 | 1,132 |       |      |
|     | Total          | 49,617 | 46 |       |       |      |
|     | Between Groups | 1,339  | 4  | ,335  | ,243  | ,912 |
| PQ3 | Within Groups  | 57,895 | 42 | 1,378 |       |      |
|     | Total          | 59,234 | 46 |       |       |      |
|     | Between Groups | 5,070  | 4  | 1,267 | ,797  | ,534 |
| PQ4 | Within Groups  | 66,760 | 42 | 1,590 |       |      |
|     | Total          | 71,830 | 46 |       |       |      |
|     | Between Groups | 3,011  | 4  | ,753  | ,505  | ,732 |
| PQ5 | Within Groups  | 62,606 | 42 | 1,491 |       |      |
|     | Total          | 65,617 | 46 |       |       |      |
|     | Between Groups | 2,947  | 4  | ,737  | ,507  | ,731 |
| PQ6 | Within Groups  | 61,010 | 42 | 1,453 |       |      |
|     | Total          | 63,957 | 46 |       |       |      |
|     | Between Groups | 2,272  | 4  | ,568  | ,502  | ,735 |
| PQ7 | Within Groups  | 47,558 | 42 | 1,132 |       |      |
|     | Total          | 49,830 | 46 |       |       |      |
|     | Between Groups | 5,770  | 4  | 1,443 | 1,018 | ,409 |
| PQ8 | Within Groups  | 59,506 | 42 | 1,417 |       |      |
|     | Total          | 65,277 | 46 |       |       |      |

|      |                |        |    |       |       |      |
|------|----------------|--------|----|-------|-------|------|
|      | Between Groups | 4,706  | 4  | 1,177 | ,980  | ,429 |
| PQ9  | Within Groups  | 50,400 | 42 | 1,200 |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | 4,264  | 4  | 1,066 | ,881  | ,484 |
| PQ10 | Within Groups  | 50,842 | 42 | 1,211 |       |      |
|      | Total          | 55,106 | 46 |       |       |      |
|      | Between Groups | 7,914  | 4  | 1,979 | 1,672 | ,174 |
| PQ11 | Within Groups  | 49,703 | 42 | 1,183 |       |      |
|      | Total          | 57,617 | 46 |       |       |      |
|      | Between Groups | 8,972  | 4  | 2,243 | 1,646 | ,181 |
| PQ12 | Within Groups  | 57,241 | 42 | 1,363 |       |      |
|      | Total          | 66,213 | 46 |       |       |      |
|      | Between Groups | 5,127  | 4  | 1,282 | ,887  | ,480 |
| PQ13 | Within Groups  | 60,703 | 42 | 1,445 |       |      |
|      | Total          | 65,830 | 46 |       |       |      |
|      | Between Groups | 2,356  | 4  | ,589  | ,423  | ,791 |
| PQ14 | Within Groups  | 58,453 | 42 | 1,392 |       |      |
|      | Total          | 60,809 | 46 |       |       |      |
|      | Between Groups | 1,285  | 4  | ,321  | ,267  | ,898 |
| PQ15 | Within Groups  | 50,545 | 42 | 1,203 |       |      |
|      | Total          | 51,830 | 46 |       |       |      |
|      | Between Groups | 4,218  | 4  | 1,055 | ,754  | ,561 |
| PQ16 | Within Groups  | 58,760 | 42 | 1,399 |       |      |
|      | Total          | 62,979 | 46 |       |       |      |
|      | Between Groups | 2,587  | 4  | ,647  | ,459  | ,765 |
| IQ1  | Within Groups  | 59,158 | 42 | 1,409 |       |      |
|      | Total          | 61,745 | 46 |       |       |      |
|      | Between Groups | 2,706  | 4  | ,676  | ,466  | ,760 |
| IQ2  | Within Groups  | 60,996 | 42 | 1,452 |       |      |
|      | Total          | 63,702 | 46 |       |       |      |
|      | Between Groups | 1,229  | 4  | ,307  | ,182  | ,947 |
| IQ3  | Within Groups  | 70,983 | 42 | 1,690 |       |      |
|      | Total          | 72,213 | 46 |       |       |      |
|      | Between Groups | 1,012  | 4  | ,253  | ,130  | ,970 |
| IQ4  | Within Groups  | 81,541 | 42 | 1,941 |       |      |
|      | Total          | 82,553 | 46 |       |       |      |
|      | Between Groups | 1,399  | 4  | ,350  | ,198  | ,938 |
| IQ5  | Within Groups  | 74,218 | 42 | 1,767 |       |      |
|      | Total          | 75,617 | 46 |       |       |      |
|      | Between Groups | 7,663  | 4  | 1,916 | ,954  | ,443 |
| IQ6  | Within Groups  | 84,337 | 42 | 2,008 |       |      |

|     |                |        |    |       |      |      |
|-----|----------------|--------|----|-------|------|------|
|     | Total          | 92,000 | 46 |       |      |      |
|     | Between Groups | 5,543  | 4  | 1,386 | ,762 | ,556 |
| IQ7 | Within Groups  | 76,329 | 42 | 1,817 |      |      |
|     | Total          | 81,872 | 46 |       |      |      |
|     | Between Groups | 6,450  | 4  | 1,612 | ,840 | ,508 |
| IQ8 | Within Groups  | 80,656 | 42 | 1,920 |      |      |
|     | Total          | 87,106 | 46 |       |      |      |



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