A proposed model for studying and determining the negotiated transfer pricing, with the existence of random bargaining behaviors of the internal performance agents

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Abstract

As a result of applying the decentralization and responsibility accounting, and the agency approach, certain subjects ; such as, transfer prices , cost allocation , expected and unexpected agents behavior and the like , became more important to be re-studied. The matter appeared to be more specific, especially, in cases of technology transfers, either in between branches or between large firms. Also, new advances in technology and production techniques which lead to suggest some advanced cost tools; i.e., ABC, TD-ABC, Benchmarking, Target Costing..... and the like, has necessitated the need for an acceptable model for transfer pricing. Transfer pricing is employed as a profit allocation method, having a direct impact on the revenues of the selling department and the costs of buying departments[33].

During this work, focus will be upon the effect of agent , behavior when determining transfer prices, including their positive and negative effect, or what was mentioned as the manipulation equilibrium, which can form a random state of nature . This has shield the light towards the negotiated prices , rather than what was known as transfer prices according to either the market or the cost approach. The reason for this movement is that the existing research has made work of the decentralized principles, while the Literature has focused upon " the centralized decision making principles . As a result of this, certain level of autonomy has been given to agents when establishing our model and then negotiated prices were considered to be the most consistent way of adjusting transfer prices, especially in cases of the absence of an external . competitive market, or finally when argument exist between internal agents .

Accordingly, a theoretical quantitative model, depending upon the principles of both the game and the search theory was developed and the main results can be summarized as follows :

1- Applying the rules of the agency theory upon the determination of the transfer prices, which is more objective

2-The model became more inclusive and dominate the segments autonomy .

3- Transfer prices according to the suggested model became more reliable and valid .

4- The model can help in avoiding types of agents , behavior; such as , moral hazards and adverse selection

5- Generality of the suggested model was appeared from its applicability to other situations; such as, in pricing the services of auxiliaries in auditing services .

6- Transfer prices suggested according to this model will be valid in both short and long run and more applicable .

7- Certain development to the general application of the agency model , where , we have suggested the necessity of including of the non-pecuniary benefits within the agent's incentive function. A point which help to shield the principal's attention to any wastage and dishonest behavior from his agents, and was missed in previous works .

Finally, certain areas for further research were suggested, and we hops to perform them in the near future .

Keywords: *Transfer prices, cost management, utility, search theory, agency theory*

This work aims to use the agency theory to determine the transfer prices of intermediate products between the different departments in the organization. This goal is being worked on by developing a theoretical model to determine the transfer prices for these products in the state of uncertainty.

It is noticeable that as a result of the application of the agency theory, and the subsequent application of advanced decentralization of decision-making, the importance of switching prices between departments became clear, with regard a to deciding the appropriate incentive for agents, especially as it [1,2,3] prepared from the results of many researches that there was a positive sign between the incentive granted to the agent and the level of performance submitted by him.

Accordingly, the optimal decision to determine the appropriate return for the agent will be a direct result of the actual evaluation of the agent's performance, which in turn is measured according to the productivity that is expressed according to this research, based on the value or price of the productivity provided

by the agent.Of course, the productivity here will be intermediate and not final, it is difficult in determining its price currently according to the rules of supply and demand in the market, which entails the need to think about setting an appropriate price for it, which is called (the transfer price) and the word "appropriate incentive" here includes what follows from the necessity of taking into account the actual performance conditions, and the state of uncertainty. Making an operating decision, how to determine a value for intermediate productivity, the expected behavior of the agent towards any decision taken, and its impact on the incentive granted to him, are different areas of work, which will be presented during the current work.

There have been many previous studies on the subject of transfer prices, according to the considerations of ease of measurement, objectivity, as well as the accuracy derived from the specified prices. The study prevented them from assuming a state of certainty and availability of information and clarity [4,3, 1, 29, 32]. The basics then for the agent is just maximizing the profitability of the department he works for regardless of his self-motivation or any undesirable behavior of him (Moral Hazards) . In addition, the state of internal negotiations between the different agents was not taken into account, which came as a result of the assumption, that all agents are nothing but implementers of the objectives of the project, regardless of their own goals [5,2,6,30,31] . In-addition to these, there are researchers who have gone deeper than that in this subject, but not with the required degree of accuracy, as [6] has done (a case study The multiplicity of agents and the recognition of the self-objective of each of them and the effect of this on the internal occurrence among them), but all this was in light of an unrealistic assumption, which is related to the equal technical ability of all of them (Fixed Proportions Technology), which was criticized in other places (1). This is because the natural and realistic situation shows the differences in abilities (operational and technical), and according to the production and operational considerations entrusted to each department separately, and also according to the quality of decisions and the powers granted to each agent within the same project.

According to the foregoing, this research mainly aims to reach to any method to study and determine the transfer prices when recognizing the state of uncertainty and the possibility of internal actions by the agents that reflect some of the unprofitable objectives of the project (as a result of the occurrence of internal collusion between the different agents 0 and to show this situation). Clearly, it will assume the absence of an external competitive market for intermediary products exchanged between the different production centers, which necessitated resorting to setting transfer prices in the absence of external market forces. Here, the focus will be more on the case of reliance on setting a transfer price based on negotiated agreements regarding between the different agents, or what was agreed to be called the negotiated transfer prices. Perhaps the focus on the previous pricing method has been followed mainly from the main objective of the research, which is to take into account the state of uncertainty when pricing intermediate products with the work of the principles and assumptions of the theory of internal agency.

Some recent works, titled as; Nash Bargaining , has produced some positive results in the area of the current work [33, 34], but our current work has some additional assumptions and hypotheses, which were tested in our model, more than what was suggested in these previous studies. At least, it was supposed in our work a level of complete autonomy, and also, decisions to be taken decentrally.

1/1 Research objectives and limits:

This research aims to arrive at the model that proves the validity of the theory in determining the transfer prices for intermediate products in the event of uncertainty . Perhaps introducing the elements of uncertainty into consideration will require the necessity of taking into account the problem of undesirable behavior by agents and how to create internal communications that depend on a degree of honesty in transferring information, or a situation similar to that in terms of ensuring the good behavior of the agent when he delegates the authority to make a specific decision.

The research model, as indicated by the researcher, will be exposed to the case of two negotiations occurring between the entering agents.The information on transfer prices will be considered one of the information that can only be disclosed to the higher management only, which represents a necessity to complete the requirements of competition and maximize the internal and subjective return of each agent, on the basis of which the agent is a function of the subjective and perhaps general objective of the firm. Perhaps this research in this way will entail from the researcher reviewing the requirements of the agent's participation in project risks, which are considered necessary to maximize the general objective of the firm.

It should be noted that during this research, the study will be limited only to discussing the case of the absence of a competitive market, which is useful in determining the transfer price, and that the aspect of determining the price will depend on the various internal behaviors of the project parties. So, the cases of the existence of competitive markets, both fully competitive(perfect Competitive market or imperfect competitive market situation will be outside the framework of this study). From here, the research problem will focus on how to reach the ideal price or the ideal value of transfer prices, which can be described as achieving a kind of equilibrium between the

departments. The product and the department used for this intermediate product , and perhaps this matter will allow in turn the availability of other forms of monopoly. The monopoly of the product here may be possible or it may be the monopoly of the user, and all of this is due to what was previously referred to [7,4] in the concept of competitiveness . From all of the above, the study model will focus mainly on determining the negotiated transfer prices, taking into account the states of uncertainties. In our model, we introduced the effect of the search theory as a way to reach at the consetrvative price which is more credible over the approach used by Clempner (2017) [33] and Trejo et al (2015)[34] who has limited his application to only following the results of the optimization models tp achieve this his objective, with the existence of the equilibrium state (Static Nash Game). Smolarski (2019) [35] , has used the real options framework, with unexisting state of agents behavior- the state of full autonomy, without any concern regarding the real staqte of agents in the firm. There are many sources of uncertainty and risks associated with transfer pricing, e.g., marker risk; Doff et al (2009) [36], regulatory risk- Borkowski (2010), [37] , functional risk- Erickson (2012), [38] , and technical risk- Widener (2007), [39], all these types of risks should be considered within our model in order to deal more correctly with the negotiated transfer pricing, from the operating prospective.

1/2 Organization of the paper:

The analytical study will be carried out during this research according to the logical hierarchy suggested by the researcher in terms of the necessity of studying the commonly used transfer pricing models in the first part, and then trying to present a critical study of these models to show their shortcomings, which are represented in many assumptions, which was built on foundations, the purpose of which is only to facilitate scientific application, without trying to reach the relative impact of these assumptions on the result of the measurement. Then of course, these will be followed by highlighting the proposed model for measurement with a list of the most important aspects of the advantages and disadvantages or difficulties in it. The last section is devoted to discussing the most important recommendations and results of the research and the most important points, that we recommended the research should be continued.

2/1 Traditional models for studying and measuring transfer prices

In order to be able to list and study these models in a way that is beneficial to the research, it is necessary to start with the most theoretical, supportive and common of these models, namely the economic models. Then there is a study of some of the applied developments that appeared on these models under the so-called mathematical models, which have been widely used recently, especially in the accounting field .

2/1/1 Economic Models :

Assuming the economic model, first of all, that the senior management of the project, by following its central system in making its decisions, the transfer price determined based on the marginal cost will eventually lead to reaching the state of the optimum situation for the facility. This assumption was basically based on another assumption related to the full knowledge of the senior management about the cost and revenues of each department or what is called the concept of information similarity, which is of course an unrealistic, if it takes into account the subjective aspects of those in charge of managing these departments. It is what prompted all of [6,1,4,2] to say that agents often, they reach a state of performance that is much less than the optimal state of the project, which is difficult to confront or evaluate by senior management

Perhaps this self-ef [8,2]fect of internal performance agents, in fact, as indicated by some], can lead to a reallocation of resources among departments, and this can be observed when exposure to the influence of internal agents with their different operational capabilities on the degrees of utilization of the available capacity of the services provided or from general cost elements in particular .

In addition to the foregoing, there are other intangible elements that in turn affect the process of resource allocation and consequently on the determination of transfer prices and the performance level of departments. Which leads them to lower their level of performance and, in turn, to lower equilbruim prices, given that the negotiating and behavioral effects of the divisions' dealings with each other greatly affect the determination of the transfer price. A decrease in the internal return of the department occurs, which in turn ultimately affects the final performance outcome of the firm as a whole. Above all, the concept of marginal revenue, which as an economic criterion for measuring department performance and as a basis for determining transfer prices, is considered insufficient, as it is expected to result in less profit than it should be for the department. This in addition to the criterion of marginal cost measurement from the point of view of economists, which is considered an unclear criterion on the one hand, perhaps completely subjective on the other, and this is likely mainly to the economic concept of the market, which sees it as competitive or tends to be competitive, a situation that makes the marginal cost equal (equivalent) with the double opportunity cost. But in the absence of a competitive market orientation, the double opportunity cost here is not equal to the marginal cost of the

intermediate product except in the case of only one producer and user, and therefore the transfer price of the intermediate product is not equal here with the marginal cost unless the last unrealistic condition is met. Perhaps all of the above represent assumptions and requirements that are difficult to fulfill from a scientific point of view, which led to the fact that the economic model is difficult to apply scientifically despite its theoretical validity. In addition to this, the previous analysis, which may only be valid in the case of a single period of time , and due to neglecting the introduction of the time element as affecting the stability and validity of the model , which requires the necessity that one of the elements of the model to create equilibrium is the time element, meaning that equilibrium may not come in the short time, but it comes if a long-term model is used, and all of this has led to recognize the existence of a state of partial equilibriumn that soon changes with the passage of time with the entry of new agents into the negotiation. From here, the traditional model has lacked the kinetics of measurement, which calls for the need to take into account the different policies of pricing in terms of pricing differentiation, different prices for similar products and similar aspects, when designing an appropriate model for measuring transfer prices according to the economic theory.

2/1/2 Linear Programming Model:

In order to face the previous criticism in terms of determining the marginal cost based on the opportunity cost, and with the unrealistic assumption that there is a producer division and a consumer division of the intermediate product only, numerical and perhaps more realistic cases have emerged than the previous ones, such as the case of the presence of one product division and several divisions consuming intermediate products. This, in turn, will lead to the productive section gaining monopoly power, and it will result in the opportunity cost being the upper limit of the marginal cost, which in turn will lead to the non-exploitation of the resources for the used departments, and thus to a transfer of resources from the consuming departments to the producing departments, which does not reflect the real efficiency of the performance of the different departments .

Here, by using linear programming models, the opportunity cost will be approximately equals to the shape resulting from the duality of solving the model, which is called Shadow Prices .

However, according to the foregoing,we note that the use of linear programming models in determining the opportunity cost and thus determining the prices of transferring intermediate products between the different departments is criticized for the following reasons:

1) The linear programming model is mainly valid in the case of centralization of decision, as it leads to ignoring the autonomy of departments to act and negotiate among themselves about determining the extent to which they benefit from the available resources. Therefore, the ideal solution for allocating resources among the different departments is centrally determined and these centers receive a copy of limited detailed instructions on the volume of outputs and prices for transferring intermediate products between the different departments, assuming that all information is available to the central administration regarding production functions and costs for these departments, which may erase the cycle of independent self-existence of these departments.

2) Shadow prices can help consumed agents to choose the best combination of products, not the optimal level of performance or activity [9,27,28].

3) The use of shadow prices in determining transfer prices is valid only in the case of stability of the selection of products on the one hand, and on the other hand if the resources are sufficiently exploited, which are of course difficult to reach and achieve, and which makes the centrally determined transfer prices based on shadow pricesn, inaccurate and does not reflect the level of efficiency of agents on the one hand, or the prices of intermediate products on the other hand .

4) In the case of non-scarcity (non-binding) of the resource used to reach the optimal solution for the selected product assortment, the shadow prices in this case are equal to zero, which in turn leads to a reduction in the transfer price, since the transfer price is usually calculated according to the following equation of the linear programming model:

$$\text{Transfer price} = \text{variable cost} + \text{shadow price}$$

Therefore, in the absence of scarcity of resources, the transfer price will be equal to the variable cost only for the intermediate product, which in turn will reflect on the reduction and perhaps also stability of the productivity and return of the department over time.

5) In addition to all of this, the basic condition for applying linear programming (through the central management of the project), requires the availability of complete information on the cost and return of each department , and there is no doubt that the delivery of this information may be greatly affected by the credibility of the agent in sending the information required of him, desiring to reach the best picture of performance, to achieve the best possible incentive and maximize his self-benefit as much as possible.

Perhaps all of the above criticisms of the linear programming model have invited many researchers to use other models, as we will see in the next part.

2/1/3 The Decomposition Models .

These models mainly seek, especially if the facility contains many cost centers, to control the performance function of the sub-sections, so that the outcome of their performance is in the direction of maximizing the overall profitability of the facility.

Here, the previous matter may be permissible in the event that the behavioral aspects of the agents do not interfere with the performance, which confirms that the performance of the departments will be entirely in the interest of the firm as a whole. But in the case of the intervention and influence of the private actions of the agents, or what was previously called the case of taking into account the effects of the externalities control and the effect of uncertainty here, the matter may require the intervention of the central management to direct the performance of the sub-sections to ensure that their performance will be to maximize the overall benefit of the firm.

Several attempts have appeared in the economic field to determine the transfer prices by applying gradient models, assuming an initial value on which the model is based, with the presence of the condition that the demand curve for the used department for the intermediate product must match the curve of the supply of the produced department for it. If no match occurs, it is re-changed the volume of production and setting the transfer price is new, and so it is, where attempts to solve are repeated until it is reached that the demand curve matches the supply curve, at which the transfer price is equal to the marginal cost of the intermediate product. The source of the difference among researchers, was the one who put in place the graded values of the conversion prices. In model [10] it was assumed that the sub-sections are the ones that give the graduated values on which the solution experiment is based, while in the model of [11] it was objected that the central administration is the one who assumes the graduated values of the transfer prices on which the solution experiment is based . In Model [12], it has assumed that the central administration is the one who assumes the gradual values of the transfer prices on which to prepare proposed solutions for the model until an ideal solution is reached. Finally, in model of [13], it relied on the automated method in assuming and choosing the gradual values. Transfer prices are separate from the central administration and sub-departments, and the model was resolved accordingly until the best allocation of the central administration's resources was reached the so-called externalities. They were not taken into account, especially the uncertainty factor, either due to the difficulty of enumerating it or not being able to represent it in this model, in addition to that the stages of solving the model and preparing the graded values that are taken into account may be large enough to make solving the model very difficult on the one hand and requires high time and cost on the other hand.

Several attempts have been made to apply the previous models in a practical form, as [14] has developed a gradual model based on linear relationships, where each department depicts and solves its goal function using its own variables as well as implicit prices, and then the central management solves the project's goal function then as a whole, $\sum$ information about all the departments, in addition to the results of solving the sub-models for each department independently. Therefore, the primary and initial role of the central management is to develop a list of the proposed transfer prices, which are used by the different centers until the ideal solution is achieved .

However, the problem that arises here is in terms of the convergence of the internal supply and demand curves so easily as assumed by the previous model, in addition to the undesirable behavior of the different agents that may lead them to affect the results of applying the previous model . This in addition to doubting the extent of the previous sections' compliance for graduated transfer prices set by the central management

In general, the stages of applying the previous model are summarized in solving the following two models:

(1) Departmental Form

Max. $s_n m_n$ where n = 1, 2,............ n

Problem Constraints:

$$k_n \ h^m n \leq b_n$$

(2) Central management model:-

$$\text{Max. A} \sum_{n=1}^{r} S_n \ M_n \qquad R = 1, 2, ... N$$

Problem constra r

$$\text{Max. A} \sum_{n=1}^{r} K_{nh} \ M_n \leq J$$

whereas :-

A: is the profitability of the firm as a whole ,........ n

S_n: marginal contribution of the unit

M_n: quantity of products for section n

K_{nh}: is the amount of factors of production E needed to produce the product Kn in section n
b_n: is the maximum available for n part of the resource
A: It is the maximum project resource .

Of course, the solution of the previous model, with regard to the department's goal function will not verify the first attempt to solve. The solution move is that the departments receive a list of the transfer prices proposed by the central management, and then start solving their models by trying the various prices mentioned in the list until the marginal cost of the unit is equals to transfer price of the intermediate product with the transfer price, then this information is submitted to the central management, which in turn verifies that the demand curve for scarce resources matches the supply curve for them. If the match does not occur, the central management again prepares a new proposed list of transfer prices, and in turn the management retries to reach at another solution to the function whose objective was not reached yet. This is repeated until the optimality is achieved in the solution at the level of the firm as a whole. Perhaps this requires the central management of the firm to be familiar with the degrees of operation or technical progress for each firm , as the only restriction that the firm management places on its various centers is not to increase its consumption of resources for the available volume of the firm .

It is noticeable on the previous models that they are suitable for determining the transfer prices in the case of the multi-product and departmental establishment. Also, with the passage of time and the repetition of the use of complicated models, and with reference to past experience, the solution attempts can be reduced to a limited number of attempts, which facilitates the application of these models.

However, despite the foregoing, it is possible to criticize the gradual models, given that the internal management departments have become an automated department that works only on implementing the detailed programs for the senior management, which rejects the dynamic and developmental conditions of management that these departments must characterize. In addition to that, these departments must implement the best mix of products according to the top management's point of view, regardless of what the actual operating conditions require. So, the goal and productivity function of each department here is assumed according to the gradual models that it works only to maximize the final goal function of the project as a whole. This matter has already been criticized in many places, as; it omits the effect of uncertainties(1) on the optimality of the solution that is communicated to , and this is what we will review later .

Perhaps what was previously clarified is mainly due to the fact that the list of supposed prices for transferring between departments is mainly explained by the central administration, which in turn may lead to reaching the ideal for the project as a whole, but of course not from the point of view of each department separately. This in turn will lead any information about transfer prices to be subjective, and specific to a certain section [13,9,10] and should not be disclosed to any other section. So how can we talk about transfer prices and the importance of decomposition models , while the previous basic condition has not yet met .

3/0 Measuring transfer prices in case of certainty:
3/1/1 problem hypotheses:
1- By inserting the element of uncertainty into the form that must be used, we note that the this will represent a conflict with previous models, regarding the measurement and determination of transfer prices, the assumption of certainty, and the availability of sufficient information for the central management about costs and returns of each intermediate productive department. It is possible to determining transfer prices, negate and replace the case of lack of available information or its complete absence from the central management to the case of full information available.

By reformulating the assumption once more, so that the median department performance cost component is a random variable, as a result of the influence of uncertain factors related to the undesirable behavior of agents - From here, the availability and flow of information to senior management will not be to the expected degree on the one hand. On the other hand, the centralized decision-making authority will not receive an equal result from the outputs, in the case of delegating the responsibility for decentralized decision-making [13] .
2- There is a large amount of undesirable behavior whose size and amount are determined according to the subjective behavior of the agent. Perhaps the effect of this factor will result in benefits in the interest of the project, but only to achieve the agent's own benefit. In other words, according to this factor, the department's benefits will not be a surplus for the project as a whole, but also will represent a part of the agent's incentives .
3- The different degrees and nature of agents in the face of uncertainty, which necessitates the necessity of guarding agents. The concept of risk-sharing is not supported instead of being cautious, and this in turn requires a degree of autonomy that must be granted to the autonomy of departments and, by extension, to agents.
4- Transfer price should be used as a second-best incentive function.
5- It must be recognized that in order to solve the problem of comparison between centralization and decentralization in decision-making, the two cases will not be equal in their outputs, because, with the

importance of transfer prices, every agent, even if he is asked to provide a sufficient amount of information about the cost of the central management, It will not protect itself and divide it from the competition of the rest of the departments. So, it is assumed that there are restrictions from the intermediary departments on their cost information, to protect them from other competing intermediaries.

6- Perhaps the case of preferring centralization will generate a motive for the different agents to collude among themselves, which in turn leads to a decrease in productivity, despite the availability of all information for the project management, and also to reach improper transfer prices and in the interest of the project. Since the effectiveness of decisions will not be held accountable, as in the case of decentralization and delegation of authority .

7- The internal transfer prices between the different departments of the facility should be affected by the internal organizational considerations of the firm. Perhaps in order to understand how the process of determining the internal transfer price is organized and governed, it is necessary to understand and take into account the internal organizational considerations from the inclusion in the authorities, to the delegation of some of them to a number of agents entrants to similar matters. Perhaps the traditional treatment of transfer prices according to complicated models goes mainly by assuming a set of discretionary assumptions related to the nature of the internal organization, and through that the appropriate analysis is conducted. Perhaps these procedures have fallen into some contradiction. They initially refer to the objectives and the the sub-objectives of the different departments, but it does not help to emphasize the importance of achieving the goal of the firm as a whole, neglecting in this, the extent of the conflict between the sub-objectives of the different departments and the final goal of the firm as a whole (especially the concept of profit). Delegation of authority and negotiations between the producing and consuming departments of the transformed intermediate products, and the consequent side attempts of the agents ,has risen the problem of transfer pricing. Those who are left behind to work to maximize their own benefit, perhaps at the expense of the general benefit of the project as a whole. Perhaps all of this is consistent with what was previously indicated by [16] when he said: "Perhaps the effectiveness of the conviction of the project's policies will depend on the project's behavior towards dividing its activities into different operational sections, relationships". Cooperation and competition among those in charge of these departments, as well as on the structure of management control and accounting systems will also complicate the same problem of transfer pricing.

8- Since the internal transfers of intermediate products represent reciprocal deals between the different departments, the economic theoretical framework for the internal organization can be generalized to take into account the aspects of the contracts included in these transfers and also the process of determining the transfer price.

9-Transfer prices can play a dual role in terms of showing and highlighting the areas of difference and distinction between the different departments on the one hand, and on the other hand they help to direct the efforts towards the target performance, as it is considered an internal performance evaluation tool, which prompts the agent based on operation from trying to follow a policy of transfer price that paves the way for the division's participation in achieving the general goal of the project until it reaches its own goals and by dividing the one managed by . In this regard [17] indicated that negotiation between the different divisions will play a key role in determining the appropriate transfer prices . In addition to the foregoing, the transfer prices will often be negotiated over their value as an aid in pushing the departments to achieve their maximum goals, which in turn helps to achieve the general purpose and objective of the project, especially when these departments are more independent from the top management, and perhaps in parallel. Nevertheless, the subject of negotiations between the different departments will in turn help to reveal and possibly confront the undesirable aspects of the behavior of the different agents.

10-Transfer prices must be viewed on the basis that they are the result of a set of activities that reflect the continuous negotiation between the managers of the different departments, in order to reach an acceptable effective tool used in negotiating the internal environment of the project to reach the best self-acceptance, and to try to confront a situation of non-compliance, resulting from some undesirable behavior of agents .

In the following parts, we will try to study the effect of the element of uncertainty on the process of measuring and determining transfer prices. Here, a supposed case will be assumed, firstly, we will assume the state of the risk-aversen agent , where he will try to avoide any more risk. Here, the model will focus on the relationship of the agent with his client . In the second case, we will assume that the agents are more willing to face risks, so the case of the agent who faces risks initially and then tries to avoid them after achieving a certain amount of gains, i.e. the so-called situation in which he faces risks until he becomes indifferent to continuing to face more risks, or the moment when more uncertainty equals, with a higher return in the case of certainty, which is the case for entering into the negotiation process between the producer of intermediate products and the user for them, and whether the previous situation contained one section of a producer and another user . Here, the researcher notes that the principal's control over his agents will be somewhat less, which brings us closer to the scientific reality that the researcher had previously called for the necessity of research.

3/1 Studying the effect of uncertainty on determining the transfer price, when the agent is risk-avers:

Of course, by referring to the previous model, we note that all the relationships that exist in it according to this state has been discussed before. [15] has developed the previous model, especially with regard to the restrictions imposed on the different departments, where they made a change, and the restrictions of the departments became nonlinear and took the following picture:

$$\text{Max. A} = \sum_{n=1}^{r} S_n M_n$$

Problem Constraints:

$$\text{Max. A} = \sum_{n=1}^{r} K_{nh} M_n \leq J$$

$$d_n (m_1 \ldots\ldots m_j) \leq {}^b n$$

$$d_p (m_1 \ldots\ldots m_{jo}) \leq {}^b ep$$

Here, d n (m1 ……. mj) represents a non-linear function of the constraints of the departmental goal function, and the presence of (m_{jo}) in the constraint of departments (J) means that the activities of the department (O) have an effective impact on the technical relations of operation in the department [p] and both are considered two departments belonging to the group of departments (p) ,

where p = 1, 2, ……, p

To clarify the foregoing, each department will be determined in each attempt to model the production level of the other departments, to which it belongs, assuming the best possible exchange level and summarizing . That is, through the different departments (N) located within the firm, the activities of one department will in turn affect the technical performance of another department. Here, the interconnected relationships between the different sub-departments, in terms of the dependence of a particular department on the products of another department (intermediate products). I was horrified, as the constraints of the department here not only became the project resources, but also the level of performance and activity of the other department on which this department depends. So, the different departments according to this model will not, in fact, maximize their own profitability, due to this intertwined relationship (Dependency) among the project departments (1), mm Does in turn affect the freedom of these departments and their ability to develop and change, which in turn turns these departments into an automatic tool to maximize the general profitability of the firm regardless of the interest of each department separately, which is inconsistent with the scientific reality.

Here, the process of transferring information related to determining the cost of production and the subsequent determination of the transfer price, from the agent to the entrusted one, will not be completely or absolutely for the upper management. Therefore, the production cost component for the higher management will represent a random and not specific element as previously assumed in the models for determining transfer prices ascertainment status . Accordingly, the decision to determine the transfer price will become an internal decision only within the competence of the agent, which in turn will work to maximize the self-benefit of the center, regardless of the difficulties that may result from this situation and related mainly to the semi-necessary actions of the center, but of course, and in confirmation of the foregoing, the center producing the intermediate units, will be afraid of disclosing various information about its production, related to the cost, return and stages of production, so as not to use this information as a means of support for the conciliator of other competing centers.

The researcher points out that the analysis here was limited to determining the transfer prices based on the basis of negotiation, or what is called negotiated prices, in addition to the hypothesis of the disappearance of a competitive market to determine the prices of these intermediate products.

Perhaps as a starting point, the above can be represented by the following mathematical relationships, as one of the forms of the agent's private benefit maximization model:

$$\text{Max u} (s) + V (\tilde{O}) \qquad [1]$$

Assuming that u(s) is the monetary benefit of the agent from the incentive that is granted to him in return for performing the tasks that you are supposed to perform, and that V (0) is the unforeseen benefits from the agent doing some tasks, the aim of which is to achieve a self-benefit for him. Either by following the well-known methods within the realization of the public benefit of the project, as is the case in trying to achieve the best job position by achieving the best possible performance, or this may be the result of following actions in the interest of the firm, in order for the agent to self-realize the best position for his personal interest, or it may be the result of an occurrence of some agreements or alliances that are not in the interest of the firm and which can be called cases of collusion between more than one agent in order to maximize their self-benefit.

Perhaps v($\tilde{O}$) can be expanded in a more analytical way as follows: -

Assuming (N) is the best cost number to perform partition and (U) is the actual cost to perform .

then:-

$$\tilde{O}= U - n \qquad \{2\}$$

That is, it can reflect the agent's insufficiency factor, which includes the agent's extravagance in cost and what he appropriates personally, whether in a legitimate way, in addition to evaluating the agent's performance. Also, the case of $v(\tilde{O})$ direction, as well as the optimal real cost of performance, all of this will take the following form:

$$\alpha =S+\tilde{O}+n \qquad \{3\}$$

From that, the search reaches:

$$V (\tilde{O})=v(\alpha-S-N) \qquad \{4\}$$

He is the one who gives the net non-pecuniary benefit, the agent obtains it in a twisted or invisible way; i.e. imputed benefits . Therefore, (4) will represent the incentive by maximizing the expected performance of the agent, which in the end will be reflected on the total cost of performing the task, and according to the above clarification of the hypotheses of the model, the effect of negative behavior has been highlighted by showing that the incentive is not only paid as compensation for positive performance, but may result in the performance of undesirable behavior by the agent, which helps to increase the cost of performance, which is borne by the principal. This in turn will increase the cost of what is borne by the guarantor to his agent, and this can be summarized In the following:-

- In return for an implicit-cost for bearing the unhelpful behavior of the agent that corresponds to some negligence and lack of knowledge during performance, or the occurrence of any beneficial behavior that will not bring the project a return.
- In exchange for an implicit-cost for bearing the unhelpful behavior of the agent which corresponds to some negligence and unmanageability during performance. Or making any beneficial behavior, but will not bring a return to the firm.
- For an explicit cost that represents the real incentive that equals the actual effort of the agent.

Therefore, the current model has taken into account the uncertainty on the part of the principal towards the actions of his agents, and the resulting effects on the determination of transfer prices, whether these effects are the result of the actions of his agents, and the resulting effects on determining transfer prices, or whether these effects are the result of unauthorized actions. Moral Hazards, adverse selection, or collusion with other agents in pursuit of self-interest, or in the face of negligence, distinguishes the current model from common models of agency, in which the agent's cost is against the incentive given to him, i.e. in the language of this research, it is meant by explicit cost only, which previously led to neglecting the implicit cost aspect arising from the agent's performance, and its reflection on determining the appropriate transfer price, which is assumed to be a reflection of the confluence of both the assumed supply and demand curves, which leads to take into account the state of uncertainty and its impact on determining the transfer price.

To clarify the previous point, the transfer price will, of course, be affected by the cost of producing the intermediate product, as well as by the bargaining power for the intermediate product. In terms of cost due to the unhelpful behavior that occurs by the agent, which leads to a decrease in efficiency and an increase in cost due to waste and waste.... Therefore, the agent's utility function is not as it is assumed in other models of agency (refer to some researches, including [2] as well as [18] since it assumed a separation in wealth and effort and that the first of them for the agent depends on the second, while according to this model, both have become correlative and inseparable, and that the agent, just as achieves a benefit from his performance, and he also tries to achieve wealth that exceeds his effort. In other ways that are not in line with the firm.

In other words, by reviewing the created agent utility function after taking into account the element of uncertainty, we note that the utility function is not only a function of effort and agent performance, as shown in the traditional agency theory model, but it is a function of two related components, one of them is effort and the other is illegal gains resulting from behaviors against the firm, all of which are a means of amplifying the agent's benefit, regardless of the effort expended. So this situation can be called a non separable utility.

Here, the agent's utility function can take the mixed form of an incentive for actual performance "and any other gains as a result of his undesirable behavior, and that any separation of these two types of returns is very difficult. Perhaps to represent the previous function, and to show the effect of returns is very difficult. Mixed returns that are difficult to separate, the function may take the following forms:

$$U_S\tilde{O} = U_S \overset{\overset{1}{\Pi}}{\underset{\underset{i=!}{\Pi}}{}} \qquad [5]$$

$$U_S\tilde{O} = \overset{1}{\underset{i=1}{}} U(S,\tilde{o})^{a+b} \qquad [6]$$

This is assuming that b is a constants

Here assuming that ψ represents the maximum benefit that the agent can obtain. and suppose that :

$$V(\tilde{O}) = V(\alpha - n - s) \qquad [7]$$

The problem represented in equation (1) can be reformulated in the following pictures:

max u (S) + v (α-n-s)=O   [8]

Suppose that the agent is in a middle position between the two risks; risk -averse and risk-seeking, i.e. taking the form of neutrality or non-existence (1)

Risk-neutral then (v) must be set to zero when obtaining the first derivative of it:

U(S)+ V(α-n-S)= O   [9]

From the above and following the method {4} in the analysis, to arrive at a determination of the transfer price, the following is assumed:

So that the agent utility function can take the following disaggregated form:

$$U(S) \begin{cases} = S(a \cdot Q \cdot w)^{1-a} & a \neq 1 \\ = \text{Log } S & a = 1 \end{cases}$$

$$V(\tilde{O}) \begin{cases} = h\,\tilde{O}(a \cdot Q \cdot w)^{1-b} & b \neq 1 \\ = h\,\text{Log} & b = 1 \end{cases}$$

Here, it is assumed that each of h, and ,s is not a negative value and that h represents a ratio greater than zero and less than the correct value. Therefore, the assumed risk-neutrality of the proxy, requires that the value b and a be equaled to zero. Here, the agent's problem becomes to arrive at the best monetary incentive (s) and the best other benefits to be achieved by discretionary methods (o). Perhaps this, in turn, will lead to reaching the best or splitting the benefit of the agent as follows:-[1]

(1) $\psi(W,\alpha,Q) = \dfrac{(S^*)^{1-a}}{1-a} + \dfrac{h(\tilde{O})^{1-b}}{1-b}$

Note that Q represents the optimum size of production, and that it represents the total return of the agent who achieves the greatest possible benefit for him and that it represents ψ , the maximum possible benefit for the agent, and (Q) represents the return function. As for W, it represents the unit cost in the case of the highest possible production efficiency.

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[1] **(1) The study of the case of risk-neutrality will be deepened in the next topic, and that it is mentioned in this topic only to complete the stages of analysis.**
(2) The mathematical proof related to this result is due to .
Ronen.j. and balachandran, K.R Transfer pricing under uncertainty . journal of Accounting research vol – 26,no-2 Autumn 1988 .

Of course, the optimal quantity of production for the agent occurs when the marginal unit cost of production equals the marginal revenue, i.e. the break-even situation, which is represented by the relationship:

$$\alpha\ (Q) = w \qquad\qquad [2]$$

Continuing the analysis, according to the above, and assuming that the agent is nothing but a risk-neutral person, both b and a will be equal to zero. Here, the agent in maximizing the pecuniary benefits, then both b and a will be equal to zero.

Max . U (S) + V ($\tilde{O}$) = S + h $\tilde{O}$

Subject to

S + $\tilde{O}$ = (α-n)

If S = O then

$\tilde{O}$ = (α – n)

But if o = $\tilde{O}$ then

S = (α – n)

Here you must confirm that the model is in line with what was previously presented {19}, which indicates that the agent has a responsibility, but it is not an absolute liability, but rather a limited one, and that any departure from that will lead to the client being the one who will be specific in his actions and that the agent will be absolute in his actions. His disposition, which largely contradicts the existing practical reality, or with the hypothesis of the necessity of a certain degree of caution to the agent in order to preserve his interests, and for his inability to act in absolute terms [2].

Of course, by referring to the determination of the transfer price and according to the contractual relationship based on the above, we note that the transfer price will be taken by the agent as a means to hide any aspects of inefficiency or decrease in the value of ([7], which was previously expressed as the unit cost expressed according to a certain level of efficiency and effectiveness.

The higher the level of effectiveness and efficiency, that is, the higher the value of (7), the lower the transfer price value. Of course, this situation falls within the framework of logicality, because fixed incentives expressed in monetary terms, arguably assume their stability, and what changes are the non-pecuniary benefits. In other words, the agent will try to compensate for what he gets in the event of a decrease in efficiency by showing a cost . The unit is high (less efficient), and therefore this is reflected in a high transfer price. What led to all this is consistent with the same conclusion reached by {8}, related to the impact of the cost of communication in the case of centralized and decentralized decision-making {35}.

But we note from the foregoing analysis regarding the determination of the transfer price for intermediate products the following matters:

(1) There is no doubt that the price of the negotiation that took place in this case has been marked by many shortcomings, since it is the most appropriate basis in the negotiation between the agent and his client, ie, the negotiation is not reciprocal or not intertwined between the different agents, perhaps implicitly in how the agent can maximize Self-benefit with the least possible effort, through the effect of the elements of adequacy of performance on the one hand, and its reflection on the amount and value of the transfer price on the other hand. Or maybe it means that the negotiation that took place is basically the result of a state of uncertainty that exists between the agent and his client, but it is clear, it is an implicit, undeclared negotiation based on reaching the highest value of the transfer price to cover the lack of unforeseen benefits that he obtains , or may mean that what the agent obtains from a client that we previously called non-pecuniary [39].

(2) Negotiating the determination of the transfer price in its previous form did not appear in the case of the multiplicity of production departments in the firm and the consequent existence of a full negotiation not only between the agent and his client, but also between the group of agents working in the project and the consequent of many difficulties resulting from the occurrence of the firm Collateral alliances and possibly collusion among some of the divisions producing the exchanged products [40].

(3) The previous model studied is considered deficient in that it neglected the element of mobility in negotiation and the aspect of the passage of time. In other words, it is a short-term model and neglected the importance of determining the transfer price in the long term, which must be taken into account when arriving at a more accurate transfer price model characterized by stability and perhaps more realism stemming from the actual operating conditions [40].

(4) The previous model, despite being exposed to exceptional cases of the agent's participation in some of the risks of the project, which is the case of no majority, yet it still shows the agent in a restricted manner and that

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[2] **Perhaps the basis for the analysis during this research is that the agent is in a careful nature and that the departure from that state of indifference is to review the potential cases to be shifted to them only, and the basis for studying the state of indifference will be in the next research.**

he is merely a follower of the instructions of the entrusted, and that any attempt by him to negotiate with the principal is its primary objective to try to benefit himself, whether by giving inaccurate information about performance on the one hand, or inflating the cost of performance, and thus the transfer price, in order to achieve super-savings that help in showing his department with a high performance appearance. But is it true that the agent has achieved the appropriate amount of autonomy, which in turn requires a degree of rationality in acting to maximize his self-benefit? Of course, this matter was not achieved in the previous model, which called the researcher to try to extend our analysis in the rest of this work to consider the above mentioned problem.

3/2 Studying the effect of the uncertainty in determining the transfer price when the agent enjoys a certain amount of autonomy:

According to this situation, the agents responsible for the performance of the firm, whether they produce intermediate goods or use them, enjoy a certain amount of autonomy, which prompts them not to accept the transfer prices as given to them by the higher management, but rather, by negotiating with whom, actually determine these prices .

Here it is evident before us many questions and inquiries about the extent and when the negotiation ends... ie, what is the point of stopping the negotiation, and what are the determinants of the aspects of negotiation. All these and other inquiries will be the subject of a scientific and analytical discussion during this topic. Therefore, it became blameworthy for the researcher, before going into the details of the proposed model to study this case, to identify the most important assumptions and determinants that govern the negotiation process, which in turn led to a shift from the fact that the agents are subject to the implementation of the prices imposed on them by the senior management to the case that they are the ones who interact together, they set these prices. However, despite the foregoing, one of the considerations that must be taken into account is still mainly related to the company's behavior regarding dividing their activity into sub-sections, and choosing the form of relationships among internal workers, whether they are cooperative or competitive relationships. From all of that, we can describe the most important considerations that must be met and taken into account in preparing the proposed model as follows:-

1- Perhaps the influence of the behavioral factor of individuals is of great importance. The matter may be cautious and influenced by their decisions (bounded rationality) and they may seize the opportunities that come before them (Opportunism) and they seek to transform the course of the economic performance of their departments, to be a start of self-return for them, before they are interested in participating in the public benefit of the firm. All of this has contributed to the emergence of the problem of adverse behavior (adverse selection) and hazards. And all this has an impact on the interrelationships within the same establishment by all the departments working in it.

2- The previous situation, especially in the case of the prevalence of conditions of uncertainty in behavior and relationships, has led to the creation of a relative scarcity of information exchanged between the different parties to the transaction, and may have hindered the exchange of this information, which led to a tendency to set transfer prices to be the result of many actions. The personality of the users of the exchange rate before it is a measure of the nature of the commodity being exchanged.

3- The degree of relative difference between the different departments, which was previously referred to by [20], represents the concept of relative ability that achieves a degree of fear among others. On this aspect, as the greater the differences and capabilities of each department from the other, the more difficult it is for exchange and dealing between them. It was pointed out [21], that is between the establishments that are characterized by the presence of radical differences in the strategies of their divisions, it is difficult to have an internal deal between these divisions, and perhaps if there is no more than 10% of the value of the total deal, but in the case of the less different establishments, the internal dealing takes .

4- The degree of independence of the departments and their lack of subordination to the higher management in making their decisions, will encourage the tendency of bargaining and internal negotiation among the different agents. With the increase in the degree of uncertainty about the future by all the producing and consuming departments, this encourages the individual department to try to achieve a private benefit at the expense of each other, which in turn is reflected in the necessity of the intervention of a third party in the negotiation, sometimes called the arbitrator, who has the right objection to the continuation of the negotiation.

5- Perhaps the problem of defining the interrelationships between an agent and a client, and between agents and each other, and the shadows it casts on the problem of determining the transfer price. For what was mentioned above, we note that the allowed amount of autonomy for agents will affect one form or another on many aspects, but rather it will be affected by several variables represented in personal motivation, personal interest and personal interest of agents, as well as the constant search towards achieving the goal of their departments (maybe sometimes at the expense of the interest of the rest of the departments). Accordingly, the contracting relationship may take one of the following forms:-

A- To allow the different agents complete autonomy to dispose of the amounts of their departments and to negotiate as they wish with other departments, while they are in the process of fixing a suitable price for them

for the transfer. This case can theoretically be listed, when the performance of each department is based on its internal profitability only. Therefore, the main concern of each agent will be to achieve the maximum profit, allowing him the autonomy to make the decision to deal with the internal parties of the project or to deal with the external market. Perhaps this is what made this case rare, especially as it will clearly help in the presence of moral hazards behavior by the various agents and may lead to the abuse of the scarce resources available.

B- To allow the different agents to negotiate fully among themselves to reach the best method for internal transfers, bearing in mind the self-interest of their departments, but despite this, the central administration still has the right to intervene at the point where the project owner feels that it is not in the legitimate interest to continue the negotiation, which will not lead to a benefit to the firm or the like. Perhaps this should be special to benefit from the experience of the top management and to protect the aspects of internal dealing from possible exploitation. This is on the one hand, and on the other hand, the person who can intervene to stop further negotiation will get more information about the aspects of the internal dealings. This results mainly as an opposite result of the differences between the internal dealers, and perhaps the multiplicity of information types for the arbitrator from all parties to the negotiation was extravagant to reach the correct information that he revolves around {15}. Perhaps the previous case is the most common case and represents the point of interest of this research, as it is characterized by its relevance to the scientific reality. Negotiate when he feels that the interest of the firm has begun to be compromised.

From the foregoing, the research notes that the model to be proposed to determine the transfer price must represent two negotiating parties that are self-interested in their self-interest and that their divisions are armed with certain degrees to stop them from further continuing the negotiation initiative (the game) and the continuation of the search to a certain degree and then stop when the negotiating parties feel that all has been achieved. Some of them are for the purpose of negotiation, and perhaps this calls for the necessity of using the hypotheses of the game theory and the hypotheses of the research theory together.

From the foregoing, it becomes clear to us that the research models do not originally need the presence of an actual arbitrator or direct intervention from the administration to determine the point of stopping the negotiation, but rather it is automatically after a proper description of the negotiating parties, which represents an indication of the arbitrator supposed to exist, so it will use the research theory models, which will be discussed in the procedures coming in the rest of this work.

4/0 The proposed model:
4/1 Problem description:

Based on the foregoing analysis, we can visualize the proposed model to arrive at a comprehensive determination of the transfer price based on the influence of three parties, represented in the negotiating power of the producing department. This power is generated by the influence of the external market and the impact of the extent to which the consuming department needs the commodity, which stems mainly from the conditions of competition that It faces it internally, in terms of the presence of other departments to consume the same intermediate commodity and finally the arbitrator, who intervenes when this competition intensifies between the producer and consumer department on the one hand, which may sometimes lead to compromising the final profitability of the project as a whole. Of course, while discussing these matters, we should not miss the mention towards the focus of each of the producing and consuming departments of the commodity on the self-interest of each of them, and what sometimes follows that from the occurrence of adverse actions (adverse selection) or moral hazards, which is sometimes called competitive collusion, and the act may be accompanied by side agreements regarding between the different departments in order to achieve a common benefit for them. Perhaps against the interest of the firm , which is called cooperative collusion .

Of course, if the negotiation between the producing and consuming departments takes place in a proper manner and without the presence of the previous problems raised by them, the negotiated price that will be reached will be a subsidence of the market price that could exist if a competitive market existed. Here, an advantage of the negotiated price appears before us, which is that it may encourage both the producer and the consumer departments to increase the degree of exploitation of its production capacity, to the extent that the differential cost is justified by achieving high internal rates of profitability.

Here, before formulating the model, the researcher must point out that it is sufficient to formulate the model in the event that there is one producer section and another user section. Expansion in this case is possible and easy, as it may happen that there may be more than one producer section, and also more than one consumer section, and here by extension. We will be exposed to the problem of alliances, and two types of alliances appear on the horizon:-

A- side alliance between the divisions producing the intermediate product, and it is perhaps more appropriate to point out here that unless there is any bad faith on the part of these divisions, it is more appropriate for them to form a single alliance between them in order to face any threaten or counter threaten by the users.

b- Collateral alliances between the departments that use intermediate goods, and here they are also necessary and necessary to confront the alliances of producers of intermediate goods. Through this research, the researcher will not delve into the problem of forming these side alliances, or the form of possible alliances, as it has already been discussed in many other places.[3] It should also be noted that through this research, the researcher will consider that the produced department have a stable policy in their negotiation with the used department. Therefore, since we mention the term group of departments or alliance, they all mean the same meaning, and the researcher does not see any differences between them, especially since the form of each alliance will start from the moment of stability, whether it is a productive alliance or an alliance consuming intermediate products. Here, to facilitate the formation of the initiative that takes place between the sections producing intermediate goods and the other sections consuming them, and whether this is done individually or in the form of alliances among producers, independently of the alliances of consumers, the researcher will assume a state of lack of control here (Nominated imputations) regarding determining the transfer price. The reason for this is: (1) the presence of the arbitrator, who will intervene in the event of the occurrence of control by one of the two types of the previous alliance, which explicitly leads to harming the interest of the firm. (2) The initiative, according to this description, may be based mainly on the concept of maturity or university awareness (the Core) in acting, as such the solution that will be reached will lead to a state of internal stability that guarantees a state of internal balance in the project and thus explicitly limits any undesirable behavior or any counterproductive behavior. Of [4]course, as we formulate this case, it is no secret that there is incomplete information on both sides of the transaction, especially with regard to cost.

4/2 Negotiation Strategy:

Here, the point of reason in the behavior for the game, assuming that it is [7], and it represents a group of all the allied parties, according to which the following requirements are fulfilled:

$$\sum_{I \in s} x_i \geq V(s) \text{ for all } S \subset N$$

$$\sum_{I \in N} x_i = V(N) \quad x \in C_{(V)}$$

From the previous situation we can see that c(v), as it will represent the meeting point of the negotiators' points of view, and it will also represent the solution to the negotiating game between the two parties to the former alliance. To clarify the last condition, the researcher cites the following example:

If x_1 represents a production departmnt of one of the intermediate products used by the consumed department. Here, the negotiated price offered by the consumed departments is 90 pounds and 100 pounds, respectively. The possible solutions and the outcome of the game accordingly will take the following form:

$V(X_1,X_2) > 90.$
$V(X_1,X_3) > 90.$
$V(X_1,X_2,X_3) = 100.$
$X_i > 0$

Perhaps this will require:

$X_1 \geq 90$
$X_2 = 0$
$X_1 + X_3 = 100$
$X_3 \geq 0$

Then we arrive at the following function [5]:-

$$C(V) = (t, 0, 100-t)(90 \leq t \leq 100)$$

And this, in turn, will mean that department X_3 will not have less than 90's offered price in the previous negotiation, and that Section X_2, which will negotiate sideways here, due to its low price as well, but the offer submitted by it is not less than 90.

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[3] **For more details, he refers to: Demski,j.s. and sappington, D.E.M Delegated Expertise, journal of Accounting Research,spring 1987. Pp.68-89 .**

[4] **Although the role of the arbitrator is assumed and confirmed in the previous cases, it is difficult to represent and highlight it in the mathematical relations of the negotiating match, which exists between the producing and consuming sections, because of the impartiality that must be characterized, in addition to the previous assumptions made for the model regarding lack of control. .... etc., so we will replace the disclosure of this role, by reaching the solution of the model to an ideal point of the solution, which is the point that by proof will represent the function of the goal of each of them, and the acceptance of it by all parties is from the standpoint of collective wisdom, which in turn will be a result of the negotiating initiative between the previous parties.**

[5] **Owen,G,Game theory, second Edition, Academic press inc. (London) LTD , 1982 . (1) .**

To develop the foregoing, suppose that there is a group of producing and consuming sections of the intermediate commodity, and this group is symbolized by the symbol N, whereby N consists of two different groups, one m and the other M, and that M and M are two non-overlapping groups, and each of them contains a group of sub-elements m.

M= (1.2…………..M) ,

M= (m + 1,m+2,…….,2m)

Here the i division has an intermediate product which must be disposed of by transferring it to another consumer division for a transfer price a_i : $I \mathcal{E} M$, $I = 1,2$……………,m

Also, department m+j used for this intermediate product where j=1,2,...,m would like to be obtained at a transfer price. The negotiation, which is formed as a specific alliance for the exchange of the intermediate product between departments a and j , can make a profit if there is:

$$V (i,m+j) = C_{ij} \begin{cases} B_{ij} – a_i & \text{if } b_{ij} > a_i \\ 0 & \text{if } b_{ij} < a_i \end{cases}$$

Here the expected alliance resulting from negotiation between departments a, j which may be calleds

$$S \subset M \ \& \ S \subset M$$

Therefore, the profitability of the transaction v(s) will equal the maximum profit that can be achieved from the transaction by transferring the commodity at the transfer price, to which it is connected between the alliance, formed as a result of negotiation and the exchange of the intermediate product. Perhaps, the restriction that will appear upon reaching the previous product will focus on restricting the autonomy of dealing to some extent, meaning that the fractionalization of the transaction is used for the intermediate product, so he will obtain his needs from one product of the intermediate product and not more than that. In the same situation, each product of the intermediate product cannot be sold to more than one user. Perhaps, the previous condition may contain some unrealism, but it is necessary to simplify the procedures to solve the problem. We will call the previous condition provided that the transaction is not divided, or the condition of the negotiating parties being equal. If this condition is satisfied, we will obtain the total profit or benefit after negotiation in the form of the following objective function:-

$$V (S) \quad \max \quad \sum_{i \mathcal{E} s \cap M} C_{ij} \quad (i)$$

If the alliance includes more producers than users, then:

$$V (S) = \max . (m + j) \mathcal{E} S \cap M \quad \sum C_i \ (i) , j$$

To generalize the previous model for group N, which contains all groups, M departments are not mixed with N departments, the maximization problem becomes in the following figure:

$$V (N) = \max \quad \sum_{J,i=I}^{M} c_i , j , (i)$$

Or in a more detailed way to show the outcome of the transaction:

$$V (N) \ \max \quad \sum_{J} \sum_{i=I}^{M \quad M} P_{ij} , c_{ij}$$

Whereas, pij is the matrix of potential exchange, elements that include 1, zero and of course, in each row and column the number of 1 is not more than once, as (1) indicates completion of the agreement, while (zero) indicates disagreement. Here,   (1 = pij) in the case of an agreement, (pij = o) in the event of disagreement. Here, instead of considering (pij), which represents the point of the ideal when solving the model, we will replace it with (qi j), it will also represent the matrix of changes or for probability exchanges with difference containing fractions of integers , that is, we will allow multiple users to exist. That is, the deal will be distributed to more than one user and not to a single user department. Therefore, the problem of the produced sections can be formulated as follows:

$$\max \quad \sum_{i=I} \quad \sum_{j=J} \quad q_{ij}^{M} \quad C_{ij}^{M}$$

And the limitations of the problem are

$$\sum_{i=1}^{M} q_{ij=1} \qquad j = 1,………..,m$$

$$\sum_{j=1}^{M} q_{ij=1} \qquad i = 1,………..,m$$

$$q_{ij} = 0$$

Of course, to complete the previous solution, 'and according to what [23] referred to, the point of agreement must occur as long as there is at least a person who has the authority to interfere and compel (or as it is called veto, effect), and perhaps this person or entity we have already referred to is arbitrary. The (arbitrator) represents between the negotiating parties. Instead of finding a solution to the previous model using the linear programming method, it will follow a more realistic and easy method, which is the A Balanced Collection.[6] Or the equilibrium solutions groups model, where it is assumed that it is a grouping of several small groups of internal departments in the project - whose total number is N, and assuming that except for the elements (Y), then:

Y = (Y₁,...., Ym) represents the balance of the numerical elements of the outcome of the match.
Here it is:

$$\sum_{i \,\varepsilon\, s_j} y_j = 1$$

Thus, we can point out that the union of more than one balanced total group will give a stable total group as well.[7] Or in other words, the balanced group is a grouping of small groups that are also balanced and stable. Perhaps this indicates and confirms the idea of the stability of alliances, which is what the researcher has previously explained, which is for self- and public benefit. Here, to solve the problem of maximization in the previous equations, it is assumed

$$q = (qs) \; S \subset N$$

It represents the optimal solution point (Extreme point) for the preceding problem, as it represents the equilibrium vectors of the assembly. However, according to the foregoing, a necessary and sufficient condition appears before us for the game consisting of n-persons game (v) in order to reach a point of convergence of any agreement on the direction of negotiation, for each group to have a small balance constituting the largest balance : N S1, ... , Sm } e={ with equilibrium vector = q

$$\sum_{j=1}^{M} q_{v(}{}^{S}{}_{J)} \leq V(N)$$

Perhaps from the foregoing, it is possible to reach an ideal point. The solution is the Balancing Vector for some small balance groups that make up the Grand Coalition.

The foregoing can be clarified in the following example: Given that there are N larger balanced alliances where:

$$N = \{1,2,3 \}$$

Accordingly, there is one small balanced alliance that may take one of the following forms: e= {(1,2) , (1,3) , (2,3)}

With the availability of the direction of equilibrium (⅓, ⅓, ⅓), the game consisting of the previous three sections (v) has a point of convergence in the points of view if:

$$(v\{1,2\} + v\{1,3\} + v\{2,3\}) < 2 \, v(N)$$

For further clarification, it is assumed that there are alliances (M1,..., Mn) and (W1, ... , Wn .). It is the possible negotiations between the previous alliances. Noting that the previous alliances are independent in their actions and do not belong to a larger alliance. Here, the overlapping final effect of the different negotiations (W1, ..., Wn) can be measured as a descriptive function that takes the following form:

$$U(S) = v \{ j_1 W (S \cap Mi) \} = 1$$

[6] **(1) It refers, for example, to:**
-Owen, G. Game theory , op . cit .p.160 .
Tijs S.H. on s-Equivalence and isomorphism of games in characteristic function form . international journal of game theory 4 , (1976), p.p 204-210 .
[7] **Tijs,S.H. on S-Equivalence and isomorphism of games in characteristic function form international journal of game theory 4, (1976) , p.p. 204-210 .**

To clarify the foregoing, the composite match (U) represents a section of the Mi Alliance, where this alliance chooses an agent to represent it. At present, the agents (N) will practice negotiation among themselves in order to reach the best internal rate for the transfers among themselves.

In order to further in-depth on introducing the aspect of negotiation among the various alliances within the same project, the researcher will assume that the outcome or proceeds of negotiation will be distributed among the parties to the alliance Tk by the value (Tk) V.

Here, the derived function takes the following form:

$$(X,T) = (X1,.........X2: T1 ...., Tm) \quad (1)$$

Whereas (T) represents the form of the alliance consisting of a group of sections X represents the negotiation proceeds that are distributed among the parties to the alliance, which must meet the following requirements:

$$\sum_{I \varepsilon T_k} xi = v (Tk) \qquad k = 1,.....m \qquad (2)$$

In addition to the above , the condition of collective and individual maturity of the parties to the alliance, according to which the return of the alliance is determined, as follows:

$$Xi \geq V (I) \text{ for all } \quad I ...., \quad N \qquad (3)$$

Finally, the condition of equitable distribution of the returns, and the similarity of the parties to the alliance, meaning that if there is a strong party within the parties to the alliance, the alliance will not take the integrated form, in other words that the emergence of a party that gets more than others from the revenues of the alliance will not inevitably lead to the stability of the alliance. This is subject to the following third condition:

$$\sum_{I \varepsilon s} xi \geq v (S) \text{ for all } S \qquad T_{k...,}T \qquad (4)$$

Perhaps the condition shown in (4) expressly shows rational collective behavior (for all parties to the alliance). And that any derogation from this condition will lead directly to a state of rational individual behavior, a state in which it will contain one of the dominant parties, which directly results in the necessity of the instability of the alliance. Therefore, we will consider condition (4) essential and necessary and must be adhered to.

Of course, in the case of balanced alliances, each alliance will have stages of acceptance and stages of opposition. This is the core of bargaining or negotiation in order to reach the best exchange rate. It has been shown from the quantitative analysis of the theory of games between several alliances, and that any opposition to the objection of one of the divisions, let it be (1) to his father, corresponds to an opposition to the counter objection of another part of the alliance opposite, let it be (L). In this case, these rational alliances are called coalitional stable alliances.

$$Sij (x) = max . e (sij)$$

Here, to supplement the assumptions, we suggest that I € s and that j€s and perhaps (sij) here represent the maximum that (a) can get (a) outweighs (j), so that department (j) cannot oppose department (j) in what happens, and the latter is the result of negotiation. But from the foregoing, we feel that the previous analysis of this situation, although it helped me to reach a certain simplification of the problem in terms of reaching a stable alliances, aiming implicitly and by the method used to reach at the best result of negotiation, which made the goal function of each of them almost similar, except this did not lead us to answering some of the following questions:-

- When does the negotiation between the different parties end?
- What is the point that represents the balance of the previous alliances, which is considered neutrality as a neutrality from the public and private interest of the department?

Perhaps, in order to answer all of that, and after the simplification that was reached in the previous part until a single goal function was reached, similar to both parties of the alliance, we must try to use some additional (complementary) methods that highlight the rest of the assumptions of the previous problem and to determine the point at which to Stop negotiating. Perhaps this matter will be discussed in the next part when studying the effect of research models in determining the ideal solution point for negotiation, which is the point of stopping negotiation. In addition to the foregoing, the research models are basically designed to become complementary models to complete the solution of game theory problems, in which the return of the game varies, and it is appropriate to the situation before us. In other words, they are models that can be applied as an integral part of the stable solution from the application of the game theory.

4/3 Perfect Negotiation Point:

According to what studied in the previous parts, we have come to the conclusion that the different departments, whether they are producing the intermediate product or consuming it, it is better for each of them, and according to the concept of maturity, to be divided and grouped under two types of alliances, one of which represents the productive departments and between the productive departments, which is illogical on the one hand, due to the lack of this amount of autonomy for these departments, and for another more important reason, which is the general interest of the project as a whole in the end. Therefore, it should be clear to us that it is

logical, without trying to go into more details, that this research does not replace it, that there are two types of alliances, one is a productive alliance for intermediate products and the other is the self- and public benefit of its different parties, so the models that will follow will be models of maximization, for the benefit, whether it is subjective or general, as we will see later on the aspects of production or the targeted use of the intermediate product, which is also considered realistic to follow unified production methods among the different departments at the level of one project. Here, the negotiation between the two previous types of alliances will be compatible with active situations of behavior with uncertainty.

Here, the negotiation stages will take the same stages of research to reach the best negotiated transfer price. All of this has led to the suggestion of applying the research theory models, from which the goal will be to reach the agreement function after negotiation. Which is then to reach the most appropriate transfer price negotiated or shortage. Therefore, through this model, we must show the extent of the repercussions on more negotiation or a decrease in the negotiating ability of one of the negotiating parties, and the resulting decrease in the benefit derived from the agreed transfer price, and perhaps a waste of the public interest of the firm as a whole [1] [8].

Perhaps the idea of research models has emerged directly through their use in the consumer theory in the process of searching for the best price, and in the labor theory in determining the search for the best job and perhaps the best wage [25, 26].

However, the previous research models are valid, as we will see later, in their application in many cases and in the treatment of many problems, especially in the case of agents' movement, i.e. in active situations, which we referred to in the previous parts. Here, the agents are not receptive to the prices of their products, but rather are specific to these prices, which is consistent with the goal of this research, which indicates that the agents enjoy a certain amount of autonomy to act, which necessitated the formulation of the research to face the uncertainties that plague this behavior. Research models stem mainly from their effectiveness in the case of performance-maximizing problems, the dynamic state, or active situations, which are the diminished state of rest, i.e. a situation in which restrictions are imposed on the movement of the agent.

Here, for the design of the negotiation model (the agreement between the different departments later), both parties to the negotiation will represent in their memory a specific stimulus function received for one of the negotiating parties and a cost for the other party. It has a cost for either of the two sides of the negotiation represented in the effort and time spent, which is reached for the transfer price (c) . Perhaps this clearly indicates the ideal of the gradual strategy in negotiation. Ending the negotiation at the moment of its beginning will mean disagreement, which does not benefit both negotiating alliances.

Here, the agent's incentive function will be represented in the maximum value that can be reached for the variable (k) (of course, the value here in its significance differs from the point of view of each of the productive department, it is greater - from a strategic point of view that enables maximizing the net incentive (and related to the internal return of the department) from ,The risk-negotiation Process (Risk - Neutral)

Accordingly, the goal is to reach an agreement price for transfers, which in the previous clause means the point at which negotiation stops when all negotiators feel that they have reached a net benefit. The question that emerge is that :which is the best cut-off point for further negotiation? (Which is the optimal agreement set to stop the value of k changing randomly as the agreement formula changes).

Assuming that, during the negotiation process, the (allied) agent has noticed that the maximum value of (k) is (z), the agent is at a loss as to whether at this point to stop or continue negotiating the transfer price. Here, if the agent stops negotiating, he will get a negotiable net return of G(z) . But if he continues to negotiate one more time, the expected return will be determined by the incentive function:[9]

$$G(Z) = (Z F(Z) + \int_{Z}^{\infty} k \, d \, f(k) - C) - z \qquad (1)$$

Note that the values in parentheses will indicate the agent's net incentive after negotiating an additional round. Thus, the net return from further negotiation after excluding the cost of this additional negotiation cycle will be greater than, equal to, or less than z. Using the integration theorem, we get from (1) to:

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[8] **It has been preferred to use the term "interest" for the project instead of using the term profitability because of the latter's many problems that have not been resolved so far, so the first term will be used during the remainder of this research, this is also to include it on the measured and unmeasured elements of utility.**

[9] **It has been preferred to use the term "interest" for the project instead of using the term profitability because of the latter's many problems that have not been resolved so far. Therefore, the first term will be used during the remainder of this research, as well as for its inclusion on the measured and unmeasured elements of utility.**

$$G(Z) = \int_{Z}^{\infty} (1 - F(k) \, dk - c) \qquad (2)$$

And from it we arrived at (3,4):

$$G(Z) = -(1 - F(Z) < 0 \qquad (3)$$

Where F(Z) represents the probability of repeating the negotiation or continuing to negotiate an additional cycle, and F(Z) ≤ 1

$$G(\infty) = (1 - F(z) < o \qquad (4)$$

In this case and according to Equation (4), continuing the negotiation will not help to achieve the function of the objective of the department or agent (allied), which calls for the necessity of stopping. Accordingly, one (constant) value of the function G (0) will be reached, when G (0) becomes equal to zero. In order not to summarize the foregoing regarding negotiation to reach the value of a transfer price agreement between different agents, the continuation of negotiation to reach the optimum value usually depends on the value of G(0) when:

- There is still a need for an additional negotiation session
- There is no need for further negotiation
- The value of the agreement reached
- There is no need for further negotiation.

$$G(0) \begin{cases} > 0 \\ < 0 \\ = 0 \end{cases}$$
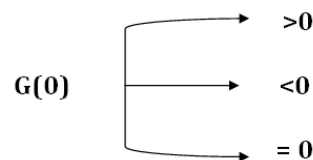
To represent the state of being equal to zero, we will assume that the function takes the form G(K) where:

$$G(K^*) = \int_{K}^{\infty} (1 - F(k) \, dk - c) = 0 \qquad [5]$$

And then we arrive at the following result:-

$$G(Z) \lessgtr 0 \quad \text{according } Z = Z = K^*$$

We can reach an important conclusion regarding the determination of the transfer price according to which whenever the maximum value of the random beneficiary (k) is less than (k*), any new negotiation cycle will produce an additional positive return, which encourages a cycle of negotiation continuity and vice versa. Noting that (k) Which if the value of (k) exceeds, represents the reservation value of (k), and of course the stability of the negotiation will be affected by the value of (k), which if it exceeds the value of (k*), the negotiation should be stopped, which will lead to counterproductive results. Here, the optimal strategy for the different agents must be basically adopted and expressly aimed at reaching the conservative value that each interlocutor believes is ideal in relation to his personal motivation function and in relation to the department for which he works. Expanding on the above, if one of the agents uses an arbitrary value (k) and assuming that the net incentive function is (vk), the following relationship can be evident.

$$v_K = C + \int_{K^*} t \, d f(t) + vk \, f = (K) \qquad (6)$$

To clarify equation (6), we find that the first item c represents the cost of further negotiation, and the second item represents the expected incentive if the value. k is greater than k*. The last part of the equation

represents the expected net incentive when k is less than or equal to k, which is the case for continuing the negotiation.

To solve equation (6) using the rules of integration theory, we arrive at VK, which represents the expected net current incentive for the agent from the negotiation as follows:-

$$Vk = (- c + K (1 - F (K) + \int_{K}^{\infty} (1-f (t) \, dt) \, / \, (\, 1-f (k) \quad (7)$$

According to the foregoing, when the agent reaches the value k equal to the value, he will become indifferent between continuing or discontinuing the negotiation, a condition that clearly indicates the state of the agent's neutrality.
In addition to the foregoing, it is possible to add somewhat to the previous results, because by applying the rules of partial differential with respect to equation (7), we arrive at:

$$Dk^* /d c = - \{ 1 f (k^*) \} < o \qquad (8)$$

From equation (8), we can stop at an important point, which is the futility of further negotiation when it becomes clear that the negotiation cost, which includes the time and effort required for negotiation, as well as the cost resulting from disrupting the completion of internal exchange deals, whether it creates a relative incentive decreasing by the value of the previous cost, and this in turn will help to reach the best negotiating strategy that must result in the best negotiated transfer price. Perhaps this represents a logical and practical alternative to the presence of an actual arbitrator to stop the negotiation at a certain point. For more depth, we will assume that the number of times the negotiation is expressed by the symbol (N), which takes place before stopping.
Here we find that : [10]

$$p(N=n) = \{F (k) \}^{n-1}(1, n=1,2\ldots.n \qquad (9)$$

Since (n-1) the number of times of negotiation will give a return less than (k) due to the fact that the extreme point has not yet been reached here, the probability distribution of the function (9) is called the Geometric multiplex.

From (9) we arrive at:

$$E (N) = 1 / [1 . f(k^*)] \qquad (10)$$

The inevitable result here is that the higher (k) the more this indicates the expected increase in negotiation (N).

$$\int_{-\infty}^{k} F(k) \, d k = c \qquad (11)$$

Here, from equation (11) we have arrived at the basic relationship in the research theory and the subsequent development of the researcher through the negotiation process between agents to determine the most appropriate transfer price from their point of view, as the agent, according to relationship (11) mainly searches towards the most appropriate transfer price .
Assuming that (v) represents the maximum value of the net incentive and that (0) represents the benefit or incentive of the agent in the form of a particular function, the following results follow:
- Should stop negotiating when Uk > v
- Indifference between continuation Uk > v
In continuing negotiation or stopping it, which is the case that represents the neutral agent towards the risk levels, where we should notice that, the value of UK will be t6he kee factor.
Here, you should continue negotiating when you are Uk< v To sum up all of that, the optimal set of transfer price agreement from the point of view of the negotiating parties can be reached from the following relationship:

[10] **Lpid,p.62**

$A^* = [\, K; U\,(K) > v\,]$ (12)

Here, to find value for (v), that is, the conservative value of the transfer price, then from equation (12) we can arrive at

$$V = c + \int_{A^*}^{\infty} U(K)\, d\, F(\,(k) + \int_{A^*} d\, f(K)\,)\, v = 0 \qquad (13)$$

$$V = (\, c + \int_{A^*}^{\infty} U(K)\, d\, F(\,(k) + \int_{A^*} d\, f(K) \qquad (14)$$

Perhaps to represent the relationship (12) of an optimal set of transfer price agreement, which must be noted that it will be preceded by a set of unrelated decisions of agreement and refusal , the researcher will represent this in the following form:

      accept   reject   accept   reject   accept
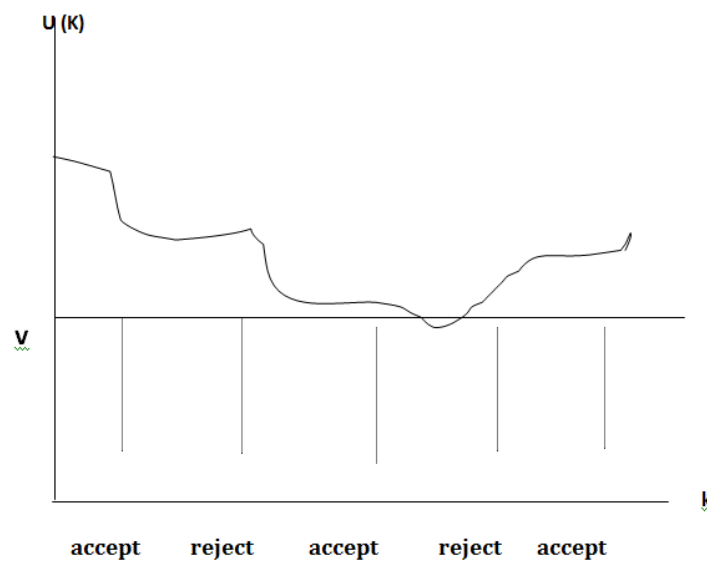
Of course, the use of the set of acceptance point instead of the point of acceptance is considered more than victory because acceptance does not represent that it will precede attempts and points of agreement and rejection, all of which are not connected together until the final strategy is reached, which is considered optimal from the point of view of the two negotiating parties[11]. In addition to the above, the negotiated price that will be reached (the bidding price) will include several information from the point of view of each of the negotiating parties, especially the marginal cost, the conditions of the production capacity of each party, the extent of expansion needs, the expected internal demand function. The extent of autonomy available to all parties to negotiate, in addition to the return, or the self-motivation of the coalition parties and the extent to which this is affected by their supposed behavior and if it is a general behavior in favor of the firm as a whole, organization oriented, or purely self-interest, the goal is the self-interest of the person managing the department.

Perhaps, the point of university guidance to achieve the general goal here was the point that was assumed to represent the main axis, which in turn excluded any intervention by the arbitrator, in order to simplify the procedures for solving the model. However, the researcher still hope, in the short term, to highlight cases of clear differences in the views of the internal departments, and to give priority to their own interest over

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[11] Of course, there is an implicit assumption that was not explicitly mentioned in many places of this research, which is the point of agreement on both sides of the negotiation, as it represents the point of indifference, at which the chances of continuing the negotiation are equal with the chances of stopping it, from the point of view of the negotiating parties if Then he will be satisfied with the specified price.

the interest of the firm as a whole. Perhaps this will, in turn, lead to a difference in the function of the goal of the negotiating parties on the one hand, and on the other hand, the emergence of the role of the arbitrator clearly, which is what we hope to perform in another research.

5- Research results and recommendations:

During the previous study, the researcher attempted to study and develop models for determining transfer prices, and took into account the effect of behavioral factors for agents based on the actual internal implementation. Therefore, the study model claimed that uncertainties arising from the adverse and moral hazard behaviors of the agents in general. It was found from the examination of the accounting field and the accounting and economic models for measuring transfer prices, that these models were developed for the purpose of ease of public application of many assumptions. Most of them are on the side of uncertainty, and the researcher has felt from studying previous models that , even if implicitly, have assumed a central aspect of making internal transfer decisions, which leads to a limitation of the internal autonomy of operating departments and contradicts the modern trend of business projects towards decentralization of management and the application of the concept of responsibility accounting.

In order to take into account the effect of the two previous concepts, it became clear us, the need to take into account the effect of the agents' behavior, especially with regard to determining the transfer prices, which will be determined decentrally by the agents (especially in the absence of a competition), which is called the negotiated transfer prices. This leads to t he researcher's point of view, that the field studies that were conducted [27 , 4] to determine the internal pricing methods, have shown that more than 30% of the firm under study mainly follow the methods of internal negotiation or what is called negotiated transfer prices, in setting a price for internal transfers between the intermediate production departments and the departments used for them. From his previous study, the researcher reached the following results.

1- The aspect of negotiation and bargaining among the different agents is a basic and necessary consideration that must be recognized, before arriving at a valid and effective model for determining the internal transfer price, as long as the evaluation of the performance of the agents and thus determining their own objective function (the incentive), which will in turn depend on the internal production for their departments.

2- There is a positive relationship that must be explicitly acknowledged and taken into account, which is that the variable (unseen) agent's motive depends in part at least a function of one of its independent variables, and perhaps the most influential, the transfer price, the intermediate product that he produces, and perhaps also the state of his use, by the department he works for according to the nature of the department's work.

3- The use of the game theory entrance in recording and highlighting the negotiation events between the agents or the alliances producing and users of the internal intermediate products is valid only in the statement of the hypotheses and possibilities of the negotiation. But he cannot highlight the state of negotiation stability, which is the point at which a convergence occurs in the negotiators' viewpoints, i.e. the point of agreement. The meeting point of the negotiators' points of view, which includes preserving their own interests, and emerges before the project administrations, the moment at which the administration must intervene to stop the negotiation if the different agents prefer its continuation in order to achieve any undesirable behavior of the legislature as a whole on the one hand or to achieve self-benefit for some of them at the expense of the project as a whole. Perhaps, this situation has facilitated the practical application of the hypothesis of a tight presence among the negotiating departments to preserve the interest of the project as a whole [40].

4- Perhaps, the use of research theory models after their development to suit the negotiation situations between the different agents has clearly helped, and perhaps more stable and clear, to indicate the point and therefore the price that must be reached, which is the price that must be settled for long periods, as long as the factors involved in determining it have not changed .

5- In the above, and according to the purpose of the economy, which was taken by the gradual models, the internal price of the transfer must be the one that achieves their convergence, it will be temporary. A new internal transfer that restores the balance, but perhaps by applying the proposed model during this research, i.e. the transfer price that will be reached will represent the price that should not be deviated from and adhere to because it will aim to preserve the interests of the negotiating parties and the project as a whole, which may sometimes allow a lack of convergence between internal demand with supply, which may change as a result of the desire to increase the productivity of some departments, or the effect of external demand on the final products of the firm. In other words, the point reached, which represents the optimum transfer price, will be in the interest of all parties to the negotiation and the project as well as its stability. Differences in internal supply and demand will not lead to a change in the internal transfer price, which is a matter that is very close to the practical reality that requires stability. The internal prices of transferring from the others, which makes a lot of difference, bad in terms of accounting registration or in terms of stability of internal dealings, which in turn led to some departments of internal dealings resorting to more in favor of the different departments and against the benefit of the firm as a whole . The presentation is a generalized function with non-linear relationships in the

degree of internal exploitation of the resources available for each department , as well as a whole firm. This is in addition to not forgetting the impact of behavioral factors resulting from uncertainty and their positive impact on the occurrence of uncertainty. The internal balance, therefore, the objective aspect appears clearly in the transfer price derived from the proposed model to a greater degree than that derived from the models that It has been widely used in the accounting field in the past four decades. Perhaps the foregoing confirms what [20] advocated when he referred to:

" Transfer pricing could contribute organizational stability and change. Thus, the transfer pricing system can act as a stabilizing force if the pricing rules become part of the organization's inacted reality. Such rules can also help to stabilize the organizational collation by determining the basis for the distribution of rewards and by legitimizing authority".

6-   According to the proposed model, the allocation of cost and also the determination of transfer prices according to the modern approach , the theory of the organization have become greatly affected by the degree of direct intervention by the different agents and the ability of each of them to negotiate and the information asymmetry between agents or alliances of the negotiating parties. Perhaps this matter has pushed the researcher more in terms of realism and the practical side to set an internal negotiated transfer price, as a modification to the old models, which focused upon the mechanism of the external pricing system in determining the internal price.

7-   Perhaps the reason for the proposed model's importance above other models is that it has explicitly admitted the state of uncertainty. Perhaps this was in line with what was previously called [11, 12n 38, 39] that each department in the facility usually faces different sets of transfer prices and that every change in the transfer price is mainly dependent on the change in the factors and influences surrounding the determination of the transfer price itself. It can be faced in the form of a probability distribution, however, despite the foregoing considerations and due to the novelty of the idea of the proposed model and the lack of different data that contribute to confirming the validity of the application of the model in practice. It was sufficient to formulate this model from the theoretical point of view, hoping in the near future to see and contribute to an attempt to implement it in practice, and then it is possible to indicate a range in value, the specified transfer price, and measure its sensitivity to the success of possible changes in the circumstances surrounding the project, which change from time to time. Despite all this, the generality of the model can be satisfied by its validity for application in several areas recommended by the researcher. For example, the assumptions of the previous model can be used to change the services purchased from external parties, especially the services of auditors, which have been confirmed in several places the validity of the application of agency theory models on the relationship between the senior management of the firm and the auditor, and perhaps also in pricing the services of the auditors under training in audit offices, and evaluate their performance accordingly . Finally, the well known transfer of technology between the mother company and the other international branches can depend upon the suggested model in pricing the technology transfers from one branch to the other.

8-   This model was recommended to be extended in application in different other states and similar problems on the national level and on the level of preparing the public budget in between the different ministries and governorates.

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