



## The Impact of New Technology Development on Conceptual Age in Nano Mechatronics processes

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**Original Article:**

*Received 11 March. 2017 Accepted 30 March. 2017 Published 30 July. 2017*

### ABSTRACT

In the complex environment, dynamic and highly alternating and susceptible today, organizations need to design and adopt a strategy and timely decisions needed are present, this age according to its characteristics are distinct spaces create. However, one of the necessities of survival and development of new technologies in every era is age understanding the factors affecting it also sensitive of developing new technologies are as one of the most essential and important step in any society so in this study we analyzed the development of new technologies, find the impact of these factors based on the model are presented by case study Nano Mechatronics process that is representative of advanced processes and updated on the conceptual age. To accomplish this, we have investigated the literature of new technologies, the era of nano-mechatronics concepts and processes and up to date models of that. This study empirically examines the research model using survey data from 384 senior managers of SAIRAN government company. The findings confirm previous studies that claim a positive impact of new technologies development on conceptual age. More importantly, the results indicate that, there is positive impact of Technical knowledge, The investment on technology, Level of political commitment and The maturity level of basic science on conceptual age. Furthermore, the findings suggest that experts should consider these factors as an important part of new technologies development in the conceptual age. This consideration would contribute to explain better firm-related performance, such as new technology development in conceptual age.

### Keyword:

New Technology Development, Conceptual age, Nano Mechatronics processes

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Peer review under responsibility of **UCT Journal of Management and Accounting Studies**

## Introduction

Edwards believes a high spiritual intelligence with information about different spiritual intelligence. This New Age promotes the formation of a new theoretical model of economy and society in developed countries has been growing refer to it as the conceptual age and the factor of passing the information age. Conceptual age is an age where analytical thinking and logical give their way to creativity, at the same time thinking, empathy, exploration and meaning. As we have heard and seen the international news media of developed countries with more preparation and organization of technology management, new tools and events and accept challenges. Now the new ramifies of management process and guide the traditional management Daniel Pink in his book "A Whole New Mind" from psychological perspective and relying on the metaphor of left brain and right brain tries to shift and formulation of the information age to the conceptual age. He added that recent decades a certain kind of person with a certain kind of mind belonged; A computer programmer who could write code and algorithms managers that they could deal with numbers, But the future is entirely different kind of human being belongs to a very different kind of mind. Creators of communion, Creators and illustrators mean, these people - artists, designers, story-tellers, caregivers- gain the richest rewards and share greatest joy (Pink, 2008). On the other hand, The sensitive of new technologies development in this age is one of the most urgent and the most important measures for population in each country. This process contains create new technology for products, processes, systems and better situation or completely new through uses the acquisition technology and new knowledge, experience and skill gained from it and integrate this knowledge and expertise with the data and findings contained in a firm's technology (Khalil, 2006). Technologies to meet the needs and facilitating the activities created and developed. That's why it plans to develop the concept of "scientific management" in developing countries aimed at advancing understanding, diagnosing and optimizing the use of new technologies to be developed (Jahanshir A, 2014). The Industrial Revolution began in the 18th century caused people to leave rural farming culture to enter the city they work in factories. Then we began to get apprise of the third wave of the mind is not based on force and arm strength that it called information or knowledge age based on the information technology (Jordan et al, 2002). Later in this age appeal to the reasonable needs, logic and other functions not enough. The products offered must be for the soul impressive and pleasant to the eyes. In a crowded market filled with goods are competitive advantage in the design, empathy and meaning. Soft effects of human life that have become the main instrument of superiority. The other side of the fact that the age virtually hundreds of millions of survival have been abandoned (Huiit, 2002).

## 2. Theoretical framework

### 2.1 New technology Development

Development of new technologies is what has always focused on specifically that which makes strategic implications for the country's and due to this fact that the needs of each age is different with the other ages, we should pay attention to the needs necessary for planning and action.

In 200 recent years so-called technology (IT) in terms of its breadth of meaning and many changes have been applied. Before the twentieth century in English (England) generally to explain the concept of the useful arts, usually devoted to technical training and in the "technical" terms, synonyms, while in other European countries use a different concept and generally works as scientific work (stratton, 2005). Technology describes as all tools, machines, terminology and its effects include household hardware, equipment (communications) of cargo, information, and... culture, (and software skills that produce them) (Harper, 1997). Technology development increase capacity, mainly to upgrade quality and improve the capabilities and competitiveness through technology (Mahdavi, 2002). Technology development forms through the production of domestic enterprises, transfer of technology or combination of outside and improvement takes place. Technology development at the national level is important for macroeconomic purposes and at the level of companies and organizations in order to achieve greater profits by spending a minimum of resources and the battle for survival. Basic foundation of economic growth and productivity technology development in each country and in developing countries are to ensure the achievement of the people's living standards that here are the factors to consider for the development of political participation, technical knowledge, political commitment and investment is the technology. Participation forms of political participation as one of the indicators of social and political development in the country and most obvious example is public participation in political affairs. In political science, political participation offered numerous definitions; So that some scholars in the definition of political participation, participants had focused their attention on different levels. Cox quoted Verba described political participation as "Activity knows what a tremendous impact on government actions affecting the construction or implementation of public policies such as direct or indirect like the selection policy" (Cox et al, 2012). Almond and Verba (1963), participants are divided into two types of formal and informal. The classification of formal political participation as a factor in the stabilization and cohesion in a political system and informally indicated that if the crisis in the political system may not pay attention to the transformation of violent and revolutionary (Russell et al, 2011).

Impact of environmental factors and personality on the political participation of individuals in a society can be explained according to the following pattern (Nelson, 1987):

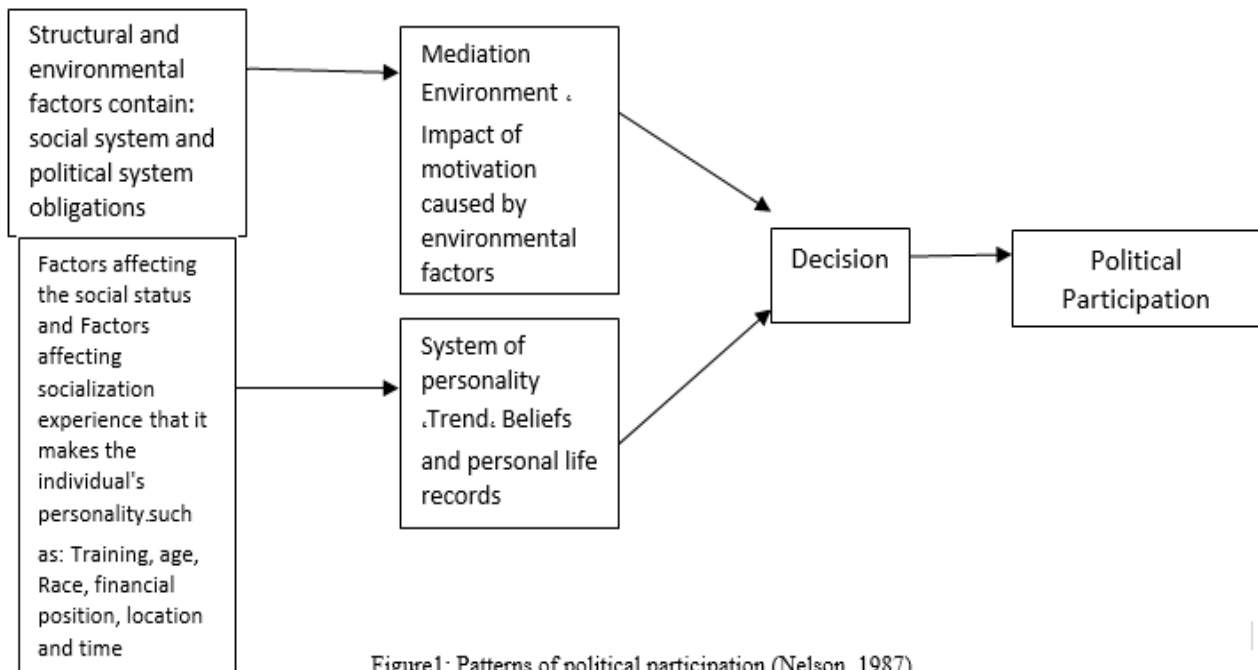


Figure1: Patterns of political participation (Nelson, 1987)

Although acknowledged experts in technical knowledge, has not provided a precise definition of it and determine the exact nature of the technical knowledge is unknowns and unknown field of knowledge(Cobern et al,2005), But the general technical knowledge in contrast to scientific knowledge is defined and described. By definition, scientific knowledge for understanding ideas and concepts, phenomena and laws of nature(Vries ,2003). While technical knowledge to explore means and ways of doing things better and more efficiently for the building and different. Characteristic of technical knowledge, communication and performance of specific activities(Argyre et al,2002).

Stages of technical knowledge after initiate an idea in one's mind and plan to turn it into a commercial technical knowledge are passing three stages such as:

1. Untested ideas
2. Technical knowledge table
3. Technical knowledge prototype

Untested ideas, include Ideas of inventors that there isn't any data or any tested relationship for that idea, so that there isn't certain potential market or function for ideas. Technical knowledge table passed from stage of ideas and in laboratory studies, technical knowledge of the future has been detected. Therefore, further studies are diagnosed correctly and more funding for additional review and improvement of technical knowledge is assigned. Further research usually leads to experiments on the use of different materials, Create sample, Multiple relationships, Data collection and studies and extend experiments(Witt et al, 2007).

The historical experience of many developed countries and newly industrialized bears witness to the fact that investment, Strengthens and increased production and by increasing the efficiency of production can be expected that the performance of company is boost(Rahnama et al, 2006). On the other hand, according to most scholars capital formation as outlined below:

Acquisition: Acquisition that occurs by the company in any industry may have variable effects on companies. A study by Hatch et al numerous changes significant economic and qualitative measures of capital markets, both for acquisition and for the early acquisition after acquisition action has arisen(Hatch et al,2002).

Strike: Another study examined the effect of strikes on capital and shareholder wealth. This study examined the effect of strikes in 1983 until 1989 in Canada found that during the 50 days before the strike, shareholder wealth has declined 1/2%(Nelson,1994).

Tax rate: Stock prices (the determinants of capital formation) when the US government agreed to reduce the tax rate of return of capital stock, Reverse flow was paying stocks with dividend yield. The findings in the prices of assets that offset the tax returns of capital are expected applies(Lang, 2002).

Bilateral lists: In one study, The influence of foreign stock index returns by a firm's common stock (the determinants of capital formation) were determined for both the London Stock Exchange and Toronto. The results suggest that exposure to list out the company has no significant effect on shareholder wealth is not permanent. However, other studies have provided mixed results. In general we can say that being on the list of Foreign Exchange did not universal and may give different results in different areas(Hangis, 2000).

Organizational Commitment likes other meaning of organizational behavior describes different ways. The most common way of dealing with organizational commitment is a commitment to a kind of emotional attachment to the organization are considered(Herscovitch,2002)(Meyer,199). Organizational commitment is an important job's view that in recent years, many researchers are interested in the fields of organizational behavior and psychology especially social psychology. The positive effect of organizational commitment on organizational performance has been confirmed in many studies. People who are out of work are

more with less commitment(Allen,1996) And in their absence from work is more(Angle,1981).

**2.2. Conceptual age**

Indicators obvious of conceptual age, according to Daniel Pink (2011) include: design, Symphony, the story, the meaning, here briefly to explain about that.

The design of this age is not just a practical product, and provide cheap and quality. The product should be attractive, beautiful and compelling. Design is a combination of practical usefulness and importance of meaning(Pink,2011). The analysis is skill of information age and combination means seeing the overall picture, Over the borders and the ability to combine parts in the form of attractive and modern, are required for conceptual age. Symphony is to put the pieces together, This ability is more than talent analysis and it is talent combined. See relationships and identify patterns between seemingly unrelated fields presentation of more specific answers(Pink,2011).However, in an age where information and data about everything there; reasoning isn't enough. Anyone can find an opposite reason. When make an art story is beautiful that is compelling. When this existing knowledge can be reduced to rules and imported computers, The story becomes more difficult visualization capabilities, is more valuable(Pink,2011). Everyday, in the world of many hundreds of millions of hardships escaped; greater opinion is required: Purpose, meaning, transcendence and spiritual satisfaction. The main preoccupations of human isn't pleasure or avoid pain: But rather to understand the meaning of life. Our fundamental drive and motor stimuli that can give human existence is seeking means(Pink,2011).

**2.3. Development of new technologies in the conceptual age**

In the conceptual age, there is information about everything and access of that is immediately; But it has lost a lot of valuable from individual pieces of information. What matters is the ability to put them together and provide them with emotional impact. Organizations and new business take advantage of this fact and new businesses such as consulting, survey and .....created. In this age modify of innovation and new technologies into the product so fast

that individuals and organizations should be able to relentless modify. They should focus on innovation, while the bulk of the implementation of outsourced or automated out(Huitt, 2012).

However, one of these new technologies is of great importance in modern societies has been talk nano-technologies, to the extent that further progress in this discussion valve opens more science to the people. Therefore the effect of factors such as investment, organizational commitment, political participation and the maturity level of basic science according to a survey by Tarek Khalil (2006), which they referred to as impact the development of new technologies on studies of Daniel Pink (2011) that factors such as design, Symphony , the story and meaning as factors affecting the era of nano-mechatronics concept is intended to examine the processes.

**2.3. Research objectives:**

1. Evaluation of technical knowledge in the development of new technologies on conceptual age in the nano-mechatronics processes
2. Evaluating the investment in technology on conceptual age in the nano-mechatronics processes
3. Evaluation of political commitment on the conceptual age in the nano-mechatronics processes
4. Evaluation the maturity level of the base of the conceptual age in the nano-mechatronics processes

**2.4 Research hypotheses:**

The main hypothesis: Development of new technologies has a significant positive impact on the conceptual age.

sub-hypothesis 1: Technical knowledge in the development of new technologies has a significant positive impact on the conceptual age.

sub-hypothesis 2: The investment in technology has a significant positive impact on the conceptual age.

sub-hypothesis 3: The political commitment has a significant positive impact on the conceptual age.

sub-hypothesis 4: Maturity Level of Science has a significant positive impact on the conceptual age.

**Conceptual framework:**

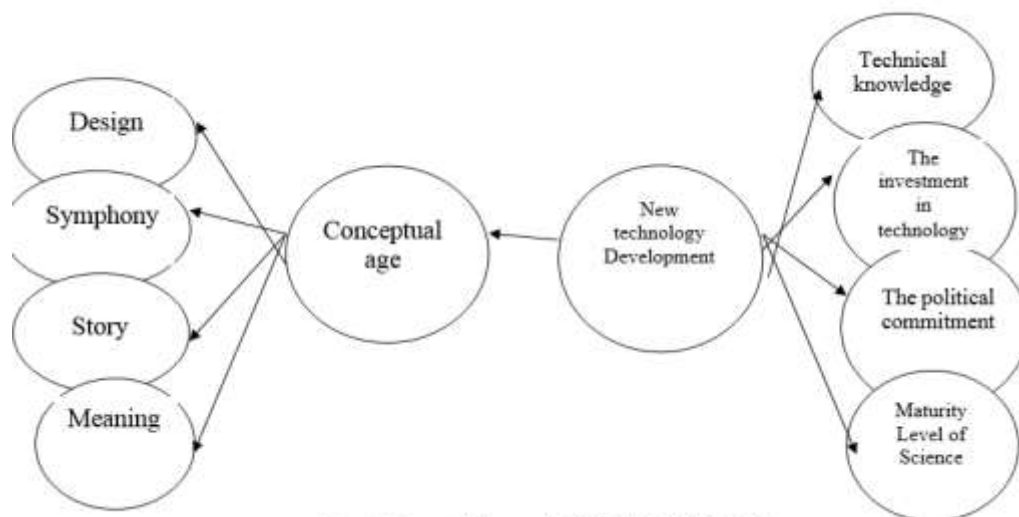


Figure2: Conceptual framework : ( Khalil, 2006) [Pink,2011]

**3. Research Methodology**

**3.1. Sample and data collection**

According to The aim of this research is applied research and with respect to subject is the cross – correlational research. The population of the study are senior managers of SAIRAN government company. acceptable method of random sampling without replacement is used for sampling. the population of this study was unlimited and cannot be measured, based on Cochran formula, sample size was 384. In this study, library study, documents study and internet reach is used. As well as researchers has used field method for collecting data. And they have prepared and distributed questionnaires among senior managers of government company.

The questionnaires consisted of two parts:

A) general questions or identification and assessments: we have collected aggregate senior managers data (such as age, sex, education, marital status, occupation) In general question.

B) Special Questions: This section contains 26 specialized questions. The number of 14 questions related to new technology development department, 12 questions related to conceptual age.

**3.2.Measures**

The four-item scales of new technology development derive from study of Tarek Khalil(2006), Which reflects factors related to the development of new technologies and participate in the processes of nano-mechatronics. For the

measures of conceptual age the study adopts 4 item scales from Daniel Pink(2011). The conceptual age focus on factors that certain Indicators expresses its special features.

**4.Analysis**

**4.1. Reliability, validity, and descriptive statistics**

LISREL 8.8 uses confirmatory factor analysis (CFA) with a covariance matrix as input and maximum likelihood estimation to purify the measurements and to evaluate the dimensionality, validity, and reliability of the measurement scales. The final model after removing items with poor performance, produces a good fit, with  $\chi^2 df = 19 = 118.68$ ;  $GFI = 0.92$ ;  $NFI = 0.99$ ;  $NNFI = 0.96$ ;  $IFI = 0.97$ ;  $SRMR = 0.057$  and  $RMSEA = 0.061$ . The composite reliability (CR) and average variances (AVE) for each research construct are higher than the cut-off points of 0.7 and 0.5 respectively (Bagozzi, Yi, & Phillips, 1991). Furthermore, all item loadings in the model are above 0.6 and significant at the 0.01, representing convergent validity (Bagozzi et al., 1991). In conclusion, according to measured indices indicated (good or bad), fitting theoretical models to observed data in the conceptual model is approved. The study also evaluates discriminant validity, comparing the squared correlation of two constructs against their individual AVE (Fornell & Larcker, 1981). According to table 1 for all constructs, the AVE, composite reliability, cronbach’s alpha are higher than the discriminant validity.

Variable	Ave>0.5	Composite reliability>0.7	Cronbach's alpha>0.7	Standard deviation	Average
	<i>New technology development</i>				
Technical knowledge	0.776	0.83	<b>0.78</b>	0.61	4.5412
The investment in technology	0.784	0.81	<b>0.75</b>	0.89	4.3542
The political commitment	0.843	0.79	<b>0.73</b>	0.75	3.6458
Maturity Level of Science	0.758	0.76	<b>0.76</b>	0.72	4.1042
	<i>Conceptual age</i>				
Design	0.791	0.84	<b>0.70</b>	0.73	4.0417
Symphony	0.615	0.75	<b>0.71</b>	0.75	4.1250
Story	0.787	0.86	<b>0.78</b>	0.69	3.4167
Meaning	0.698	0.81	0.84	0.70	4.5872

Table1: Summary statistics of the measurement analysis

**4.2. Results**

The study tests the hypothesized relationships using hierarchical regression analysis. The study centers all measures (except for those of the NPP as dependent variable) to avoid multi-collinearity problems (Mason & Perreault, 1991). Model 1 contains control variables (i.e., firm age and number of employees). Next, the analysis introduces Chart parameters and standard errors in chart 1. Then, the analysis Chart parameters and non-standard errors into chart 2. Finally, chart 3 contains chart of T-value.

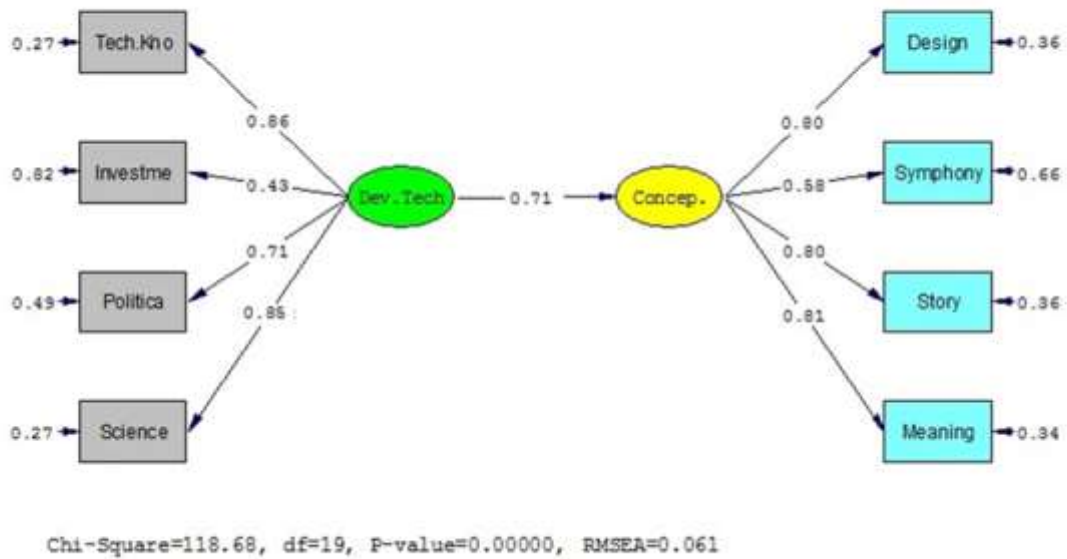


Chart 1: Parameters and standard errors

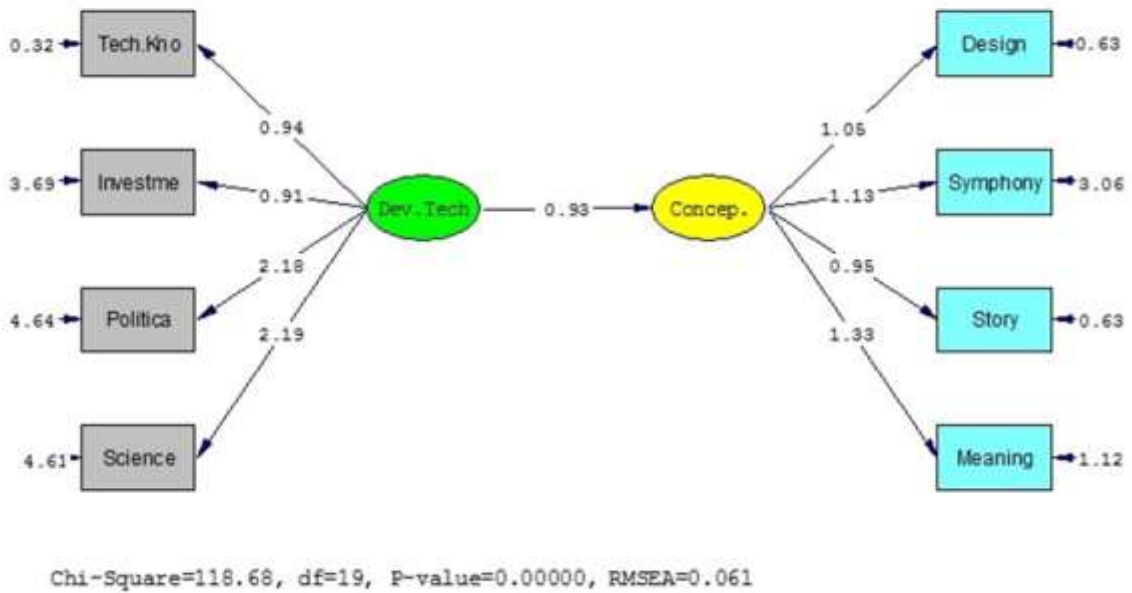


Chart 2: Parameters and non-standard errors

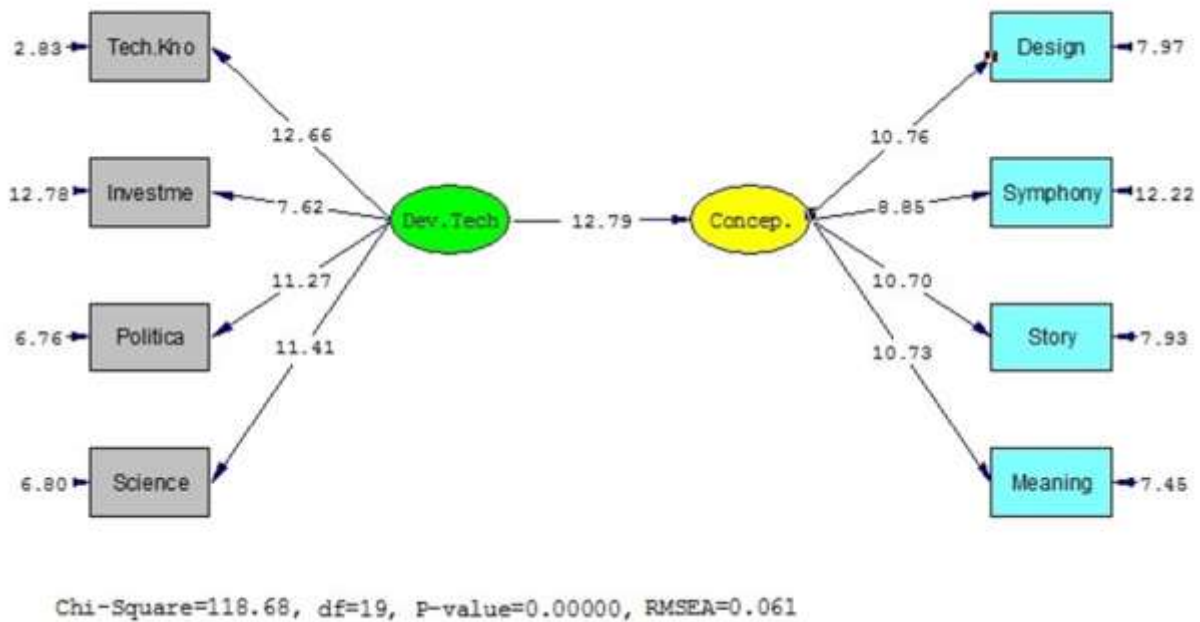


Chart 3: T-value

According to chart 1, significant coefficients and factor loadings are higher than 0.3. Which represents a significant and positive impact among all the existing relations between the research variables. And according to the results obtained all hypotheses were confirmed. On the other hand, As seen in the chart 3 path coefficients is higher than 1.96 between all variables. According to table2 all of hypotheses are confirm.

Hypotheses	Status hypothesis	Load factor>0.3	The t-value>1.96
Development of new technologies has a significant positive impact on the conceptual age.	Confirmation	0.71	12.79
Technical knowledge in the development of new technologies has a significant positive impact on the conceptual age.	Confirmation	0.86	12.66
The investment in technology has a significant positive impact on the conceptual age.	Confirmation	0.43	7.62
The political commitment has a significant positive impact on the conceptual age.	Confirmation	0.71	11.27
Maturity Level of Science has a significant positive impact on the conceptual age.	Confirmation	0.85	11.41

Table 2: Summary statistics of the measurement analysis

**5. Discussion and conclusions**

According to the results obtained can be said that technical knowledge must localizing in the country and used in the development of new products. Equipment design and coordination between products and their function will increase and by increasing the Nano Mechatronics engineering sciences and basic sciences in the field of using computer algorithms and advanced this equipment using advanced computer network for sharing sensitive information will be at the lowest possible cost. The commitment of the top management and the lack of political differences to promote and increased staff training units nano-critical processes can achieve the goals set by senior management easier than ever so greater motivation to

improve technical knowledge and personnel within organizations make fundamental changes in processes and attract investment, particularly the government and private companies in the field of nano-nano-mechatronics equipment increased and reduce the failure of the project that was too heavy and costly.

**5.1.Recommendation**

It is recommended to enter the technical knowledge up to date and localize not only reduce the country's dependence but we have changed the design and development of products and equipment Nano and it can be done with greater speed and technical cooperation greatly increased between software and hardware products.

With the increasing level colleges and specialized schools of engineering and science in the field of nano-enhanced products to the right of self-sufficiency in designing advanced navigation systems and achieve computer systems, you also need to upgrade the education system, caring for Nanoscience also tried to maturity level of knowledge gained in the nano processes.

It is recommended that managers have commitments than to update nano-technologies and if there is the political and administrative differences put them aside and various units to share their knowledge and experiences with other employees and departments to find breakpoints and make greater symphony and harmony in all administrative and production processes and the products created.

It is recommended show new achievements and innovations derived units and their localization in numerous exhibitions and exercises to attract further investment to the private sector and the government and investors with the know-how and achieve scientific maturity and understanding in the field of equipment and processes of nano commitment administrators, can investment with lower risk so private investors also can play a major role in innovation and creativity in the development of new products in the countries and communities.

And finally recommended that researchers do the same research and conceptual model with effects of factors of conceptual age on each other(chart4) and compare and report the results.

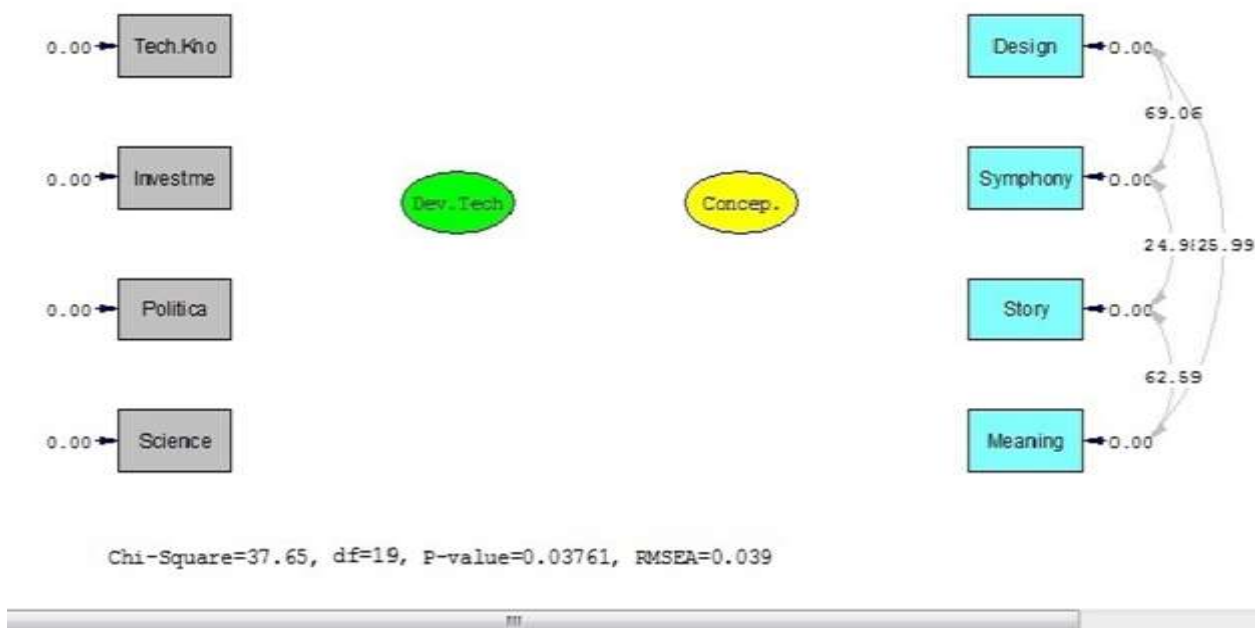


Chart4: Modified model

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