The impact of information systems on the decision-making process in light of technological transformations as a mediating variable –case study of commercial banks in the state of Tlemcen-

أثر نظم المعلومات على عملية اتّخاذ القرار في ظل التحولات التكنولوجية كمتغير وسيطي –دراسة حالة البنوك التجارية بولاية تلمسان–

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Abstract:

The primary objective of this research being to measure and analyze the impact of information systems on decision-making in the context of technological advancements as an intermediate variable. So, a questionnaire was created and distributed to a sample of commercial banks in the state of Tlemcen and The structural equations modeling with partial least squares (PLS-SEM) method was also used.

The study came to the following conclusions: There is a direct effect of information systems on decision-making and on technological transformations, the existence of an indirect effect of information systems on decision-making in the existence of technological transformations as an intermediate variable in the study sample.

Keywords: information systems; decision making; technological transformations; structural modeling; commercial banks

JEL Classification Codes : M12, M14

ملخص:

هدفت هذه الدراسة إلى قياس وتحليل أثر نظم المعلومات على اتخاذ القرار في ظل التحولات التكنولوجية كمتغير وسيطي، حيث تم إعداد استبيان وتوزيعه على عينة من البنوك التجارية بولاية تلمسان، وتمّ استخدام نمذجة المعادلات البنائية بالمربعات الصغرى الجزئية (PLS-SEM).

وقد خلصت الدراسة على النتائج التالية: وجود أثر مباشر لنظم المعلومات على اتّخاذ القرار، وجود أثر مباشر لنظم المعلومات على التحولات التكنولوجية، وجود أثر غير مباشر لنظم المعلومات على اتخاذ القرار بوجود التحولات التكنولوجية كمتغير وسيطي لدى عينة الدراسة.

كلمات مفتاحية: نظم المعلومات، اتخاذ القرار، تحولات تكنولوجية، نمذجة بنائية، بنوك تجارية

تصنيفات JEL: M12، M14

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INTRODUCTION:

Making decision action is considered to be the heart of the administrative operation , indeed since the decisions in business organisations are crucial to its developement, it is directly linked with the different problems solving . And in the age of knowledge and computing it is a necessity to show the imporatant role of the information systems and its great impact on the transformation of businesses and organisations. Because it helps decision makers to get the most important information which would help them in making the right decisions, to promote the success of the institutions, its continuity, its business, and offers its services and goods.

Scientific researches and studies show the important role that plays the decision making operation in the organisation success. Researchers made different studies and researches about the factors that influence decision making they concluded that the informations systems are among the most influencial factors in decision making , as it has proved its role in improving the flow of the required informations to the decision centers . The latter has use dit in the operation of producing and making decisions.

To activate the role of information in this filed it is necessary to employ technology in the use of precise immediate information because it is the best way to extract informations from a great deal of expanded information in multiple databases .

The problem of the study :

the problem of the study would be formulated under the following question :

How do the information systems influence the decision making action in regards to the technological transformations in commercial banks in the wilaya of Tlemcen ?

The importance of the study :

the importance of this research is derived from the imporatnce of its variables and their roles to determine and define the challenges that face decision making systems in Algerian banks and because of its need to work in order to keep up with technological developments and transformations and to study intelligent information systems directed to support financial decisions. The imporatnce of the study emerges from the following :

1)directing the attention of commercial banks departmrnts from managers and decisions makers towards the imporatance of developping current technology for intelligent information systems to respond to customer's needs, and requirements of the global banking industry .

2)the importance of the intelligent systems as one of the solutions to face technological developments and transformations.

Method used and tools of study :

In this study, a descriptive analytical method is applied by addressing the theoretical and analytical framework of the subject of study by drawing on what is available in previous studies . All types of references and resources are taken into consideration wheteher in arabic or foreign books, articles, forums, publications, and reports which have a relation with the subject of our study to cover the related aspects.

Emphasis is also placed on the filked of study to obtain data and informatiions from its main resources by adopting the structural equation medeling appraoch SEM and using the programme SMART PLS to study the direct and indirect relations and paths analysis of

interelationships between the study variables , through the use of a questionnaire which has benn used as a main tool to collect informations then design and prepare it for the reaserch hypothesis

1- Theoretical concepts :

1-1 Information systems

the expression « information systems » is obtained by joining the words system and information. the term « system » is made of a group of interactive parts to realise a shared goal, the term « information » is linked to the processed data to obtain solutions that decision makers will use (Nouri, 2015, p. 99)

From these identification it is possible to introduce the information systems as a group of components that interact with one another to collect, process, and store data. And to analyse organise and control it in order to display information or take action, or support a decision in the organisation according to specific rules (Kenneth & Laudon, 2010, p. 18)

The information system may be both manual and traditional , which means, that the procedure of collecting and data processing in the organisation of information is done in the traditional manual ways, and in this case the most important drawbacks is that it is time consuming and require a great number of skilled workers , besides hardware, devices, technics during specific periods, however , it could not keep up with the fast transformations and developements.

Most conventional information systems are calculatred systems, that is to say it invests computer technological capacities with its different components in processing data electronically (Kandilji & Aljannabi, 2007, p. 28). Many definitions emerged among them :

Alaa Abderezzaq Essalmi defines the information systems as « the group of elements bound together and which work in a complementary way with each other, in order to preapare information for the administration , so as to achieve its tasks in a precise way » (Al-Salmi, 2003, p. 29) and the purpose of this system according to the definition is to provide the necessary information to achieve its administrative activities, it is also as « a group of typical procedures that involve collecting, activating, storing, retrieving, distributing, publishing and retriving informations that the organisation needs to support decision making and controling inside the organisation » (Mubarak, 2008, p. 51)

That is to say it is the materrial operation that support the organisation system through supplying it with information to achieve its goals .

Djawed Chawqi defines the information systems as « agroup of human and automatic elements to collecting and activating and processind data accordind to specific procedures and rules, so as to transform it into useful information that would help the concernedadministration in planning and controlling operations and making decisions » (Kurtel & Boughlaita, 2011, p. 138) . While Robert Reux defines the information systems as « an organised group of resources including materials, programmes, persons, data, and procedures that help to entering, processing, storing, and communicating information in different ways (Reix, 2002, p. 75) and all the oragnisation works on to get a distinguished system of communicative that can achieve the foloowing tasks ; collectind sata, processind these data, and analysing it , deriving results and inforamations and finally providing these data to its users ; managers, decision makers … to help in taking right decisions

1-2 **Making decision process:**

Many authors define, explain, and analyse the decision making process in the organisation since it indicates the adoption of the study and objective thinking to arrive at a specific decision, that is to say, the selection, the preference, for alternatives or the available possibilities. Before tamlking about the most imporatant definitions it is important to distinguish betweeen making decision and decision making.

Decision making process includes all the decision stages starting from determination of the problem, analysing its causes, pointing out its variables, displaying the possible solutions, building models, then selecting the best substitute and executing it. While making decision is the stage of camparing and selecting the appropriate substitute.

That is what is found in Kaleldeh's first defintion in which he defines making decision as « Analysing and evaluating of all the shared variables which are submitted to scrutiny , it is introduced and all subjected to the scientific measurement, scientific research equations , scientific theory, and quantitative and statistic methods to get a solution or a result, and ultimatelly to conclusions and recomendations which would put thissolution or these solutions into scientific and practice execution ». (Kalaldeh, 1997, p. 254)

The second definition of Ahmed Mohammed Ghanaim is « making decision is the use of some objective standards to select a substitute among two possible ones or more » (Ghoneim, 2002, p. 122). The third definition of Mohammed Abdel Fettah Assayrafi is « decision making is a mental process that crystalises in selecting among a variety of substitutes with specifications that fit with the availabale possibilities and the required goals » (Al-Sairafy, 2003, p. 60). Abdul Ghaffar Hannafi and abdussalem Abu Qahf added a definition that agrees with most authors : « Making decision process is selecting one substitute among two or more others to achieve a goal or many goals during a specific period of time in the light of internal and external environment and the available resources of organisation ». (Hanafi & Abu Qahf, 1993, p. 132).

2- Previous studies:

2-1 Mohamed Atwah Al-ma'aitah , The Role of Business Intelligence Tools in Decision Making Process.(2013)

This study aimed at clarifying the effects of using business intelligence strategies on the procedure of taking decision , the study was displayed in the Jordanian Customs Department and the purpose behind intelligent businesses is to get to the data in interactive and the possibility to analyse and transforme primary data to useful informations helpful in making decisions process . the study ended with many conclusions the most important are :

-There is a great effect of the use of intelligent businesses tools in the decision making process.

-Business intelligence tools and techniques are closely related to the process of making direct and effective decision. Avoid waisting time, and reducing risks, and there will be no space for ambiguity in work, besides large world competition .

- The system of intelligence businesses supports the decision making process by reducing time, avoiding costs , and human mistakes.

-intelligence businesses system is a technical globalization in the world market, it provides the organisation with the ability to work with the habit of the new intelligence revolution

-the study ended with the researchers advocationg the importance of tools and techniques of the systel of intelligence businesses from all public and private institutions, because it has become one of the factors of success for any organization , a remark that was mlade in the Jordanian Custom Department.

2-2-Gloria Phillips-Wren, Intelligent Decision Support Systems (2013) :

This study aimed to know how are artificial intelligence techniques used to reinforce and promote the support of decision makers through its tools, which are fuzzy logic, synthetic network, genetic algorythms, and natural processing language . The study focussed on merging the systems in a way to know the use of intelligence techniques merged into information data, and directed to support decision making , where it was studied and summarised the benefits of the systems of artificial intelligence used in the process of support of decision making.

The study has , therefore, shown that artificial intelligence science interferred heavily to raise the competency and quality of the decision, and raises the competency of the research process between the substitutes of a variety of solutions , this is due to the possibility of this systems to support the process of making decision .

2-3- Shim, Jung & Warkentin, Merrill & Courtney, James & Power, Daniel & Sharda, Ramesh & Carlsson, Christer. Past, Present, and Future of Decision Support Technology. (2002)[2]:

This study aimed to clarify the technological developements and the application of the system of supporting decision, this study is meant to scope decision support system through years. At the beginning the decision support system has provided systems with an appropriate use of the available technology in order to improve the effectiveness of activities , then making decisions support systems faced a new challenge to design in smart work stations, then the data warehouses and analytical processing began to expand in the field of decision support systems. With the technological innovation and the transition to the new millennium, decision support systems were used on the web.the study found that the latter provided many advantages to decision makers , the most important of which was providing information on a permanent basis that is not restricted to a specific time, and it is immediate and renewabale. It provides advanced analyses that help analysing and displ aying organised data from different resources and gives access to the expert models and systems in addition the support systems that rely on the web works on collecting , merging ,and adapting computer technology to serve the research.

2-4- Eleonora Pantano,The role of smart technologies in decision making : developing, supporting and training smart consumers (2019) :

The study aimed at the examination of the use of smart technology for consumer's behaviour , this study provided allthe theoretical contributions, methods, model tools, case study that contributed to the understanding the effect of innovation and smart techniques in consumer's

[2]Shim, Jung & Warkentin, Merrill & Courtney, James & Power, Daniel & Sharda, Ramesh & Carlsson, Christer. (2002). Past, Present, and Future of Decision Support Technology. Decision Support Systems. 33. 111-126. 10.1016/S0167-9236(01)00139-7.

behaviour through presentation of seven participations that explain and clarify how smart technology took a central role in consumer's behaviour.

The results concluded that technology has become intercomplementary part of consumer's experience through its influence on traditional cultures of shopping, it becomes one of the decisive issues and this is for understanding the actual and future developement of the marketing.

And i advice researchers of the importance of keeping attention to the developement and its hope to motivate more researches that show the role of technological developement in improving services

2-5- The study of Arzi Fethi Belhamou Fatima Zohra, the contribution of expert systems in improvment of the making decision :

The study aimed to drop the application of the expert system on the recruitment process in institutions through analysing the effect of the system on making decisionsin term of ease, accuracy , and time saving. As the great developement of technology and the emergence of varities of systems and tools that has as target to support making decisions.made by decision makers in need of a system the responds to the needs of informations .The study of the recruitment process was chosen in public sector with its standards and conditions, researchers has confirmed that the expert systems has become an urgent necessity which works and make work easier, reducing costs and empower making right decision.This study arrived at the conclusion that Algerian institutions especially public ones are in luck of the systems, and it is due to the absence of qualified human resources in addition to its high costs.

The model of study and its hypothesis :

Based upon the problematic of the study and its gaols this study sought to test the following hypothesis

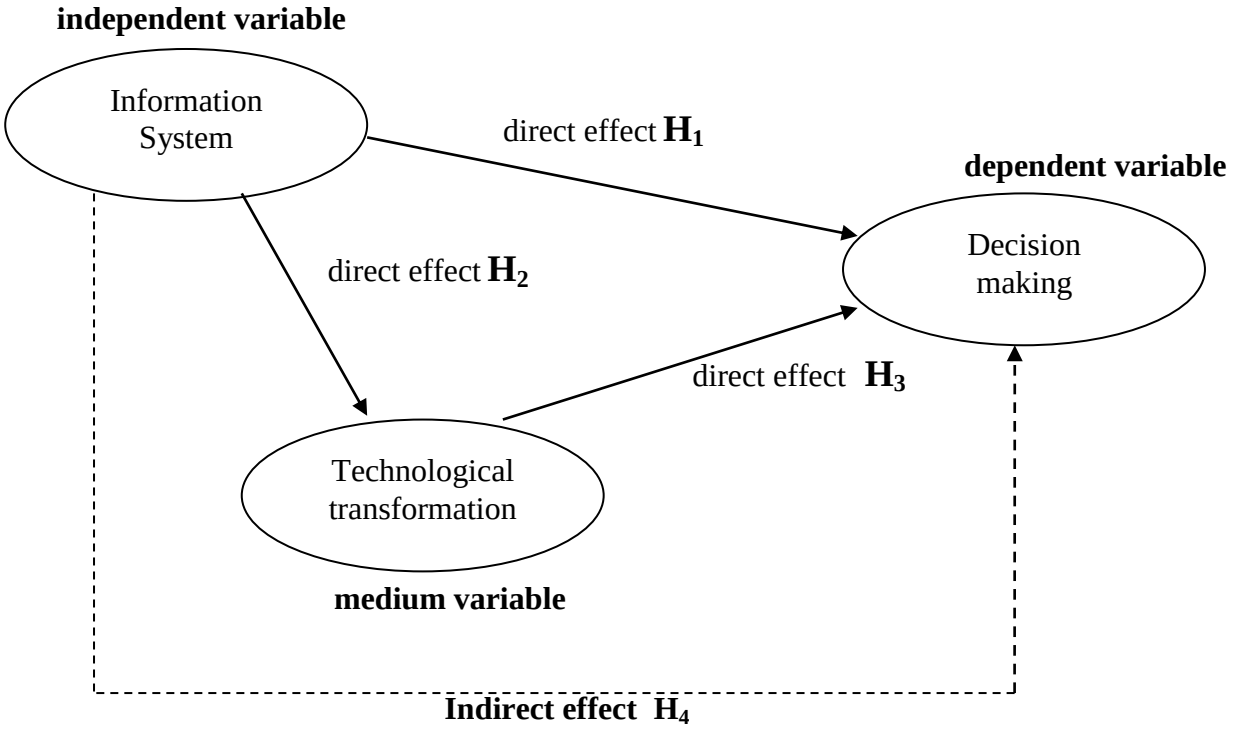
H1 : thers is a positive and direct effect with statistical significance to the information systems in making decision at a significant level of 5%.

H2 : there is a positive and direct effect with statistically significance of information systems on the technological transformations at a significant level of 5%.

H3 : the is a positive and direct effect with a statistically significance of the technological transformations on making decision at a significant level of 5%.

H4 : there is a positive and an indirect effect with statistically significance of the information systemson making decision with the presence of technological transformation as a medium variable at a significant level of 5%.

Figure one (study model)



Source: Prepared by the researcher based on various previous studies

3-Practical study :

3-1- the society and the study sample :

Based upon the data collected from questionnaire which was distributed and directed to 13 commercial banks in the wilaya of Tlemcen , and the analysis made on 100 questionnaire among the distributed ones available for statistical analysis (115questionnaire were distributed for workers in banks as managers, deputy directors head of department, head of branch . 100 questionnaires were handled back while 15 eliminated as they were not taken as data because of the seriousness of it's filling as a result the questionnaire's return rate is estimated to 86.95% which is quite a good and acceptable rate in statistics.

3-2- Analysing the main tool of study (The Questionnaire) :

The questionnaire was prepared and designed on 49 sections of answers, it was improved thanks to the review of previous studies and based upon Likert Scale which is made of five choices. The researchers checked the questionnaire and revised itr under supervision of experts in the field of data systems, and designed it as main tool to collect bthe necessary data to achieve the purpose s and goals of this study . The study tool is made of :

Part 1 : a group of paragraphs about personnal information , job of the sample informants that is to say : age, sexe, and experience

Part 2 : made of four fields or sections that discusses the contribution of inforamations systems in making decisions on the light of technological transformations as follow :

Section one ;Data systems are made of 16 paragraphs to measure how far does the bank administration the information systems

Section two ; making decision process made of 16 paragraphs to measure how much the making decision process is affected by information systems and technological transformations

Secion three ; technological transformations made of 17 paragraphs to measure how much is the bank following fast development in making financial decision

And then answering the questionnaire according to likert scale as the table (1) displays :

Table (1): Approval score scale according to Likert scale

Strongly Disagree	Agree	Neutral	Disagree	Strongly agree
(1)	(2)	(3)	(4)	(5)

Source: prepared by the researcher

3-3-Testing the validity of the study :

The test of Cronbach Alpha is used to measure how valid is the measurement tool , since the value of the Cronbach Alpha questionnaire paragraphs reached as a whole 0.946, while its value in regards to study variables are as follow :

Table (2) Cronbach's alpha value for the study variables

Variables	Number of paragraphs	Cronbach's alpha value
The independent variable information systems	16	0,905
The mediating variable is technological developments	17	0,892
The dependent variable is the decision-making process	16	0,914
Total	49	0.946

Source: Prepared by the researcher, based on the results of statistical analysis (SPSSV24)

The value of the Cronbach Alpha questionnaire reached 0.946 ; which is a very high value and indicates the accuracy of the questionnaire to a high degree.

It is noticed, according to table(2), that the value of Alpha Cronbach of the three is high and therefore the scale is characterised with high degree of validity and accuracy and constancy in addition to an acceptable degree of internal consistency, that means that the questionnaire is qualified with high degree of honesty and constancy , and can be used as a tool for empirical study.

3-4- The study model display and analysis

We base our study upon modeling of partial least square s structural equationto evaluate the model specific for study. This is due to the absence of general indicators that allow the judjment of quality of the model

The method of partial least square s structural equation modeling is made of two elements

1/evaluating the external model (measurement model)

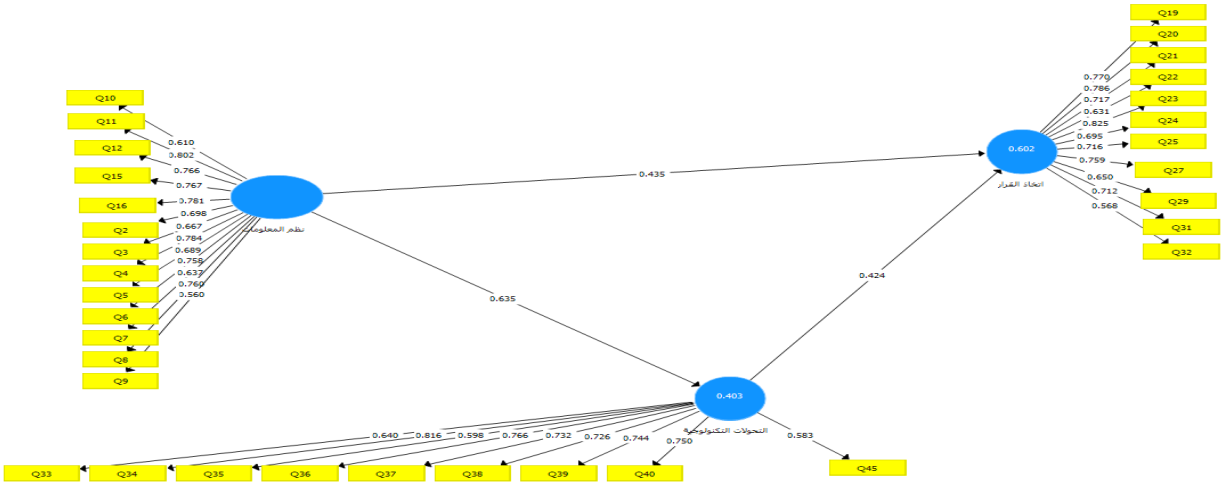
2/evaluating the internal modelstructural model) (Wong & Kowng, 2013)

The model of partial square structural equation works in performance with small prototype and complexe models , it does not imply any anticipated hypothesis about the used data in the study, in addition it is used when assumption of the condition for multivariate normal distribution are not fulfilled.

The quality of the model is evaluated through a set of indicators shown as follow :

At first the model validity and reliability was tested to evaluate the validityof indicators .16 items were ommitted because the external saturation of the term « Outer Loading » appeared between (0.4-0.7)that is why it must be ommitted . if this ommission leads to rising the reliability composite and the average validity explained over the proposed threshold(0.5) which occured in this study and it is illustrated in the following figure :

Figure (2): Results of the loading parameters (outer loadings)



Source: Prepared by the researcher based on SmartPLS3 outputs.

From the above figure we conclude that there are three latent variables (information systems, making decision, technological development) and each latent variable is linked to a set of variables (Manifestes) that express the scales of measurement that is to say « the items » built for the questionnaire by reflective scheme , which means that every latent variable is measured, starting from a set of measured variables specific to it

Arriving at more valid models for use and more appropriate for research environment means that those models are characterised with high reliability and validity which allow other future studies to use, and this is where the importance of the convergent validity and descriminative validity appear that's why the actual study adopted for testing the reliability of the used standards

A. Convergent Validity :

Table (3): Indicators of convergent Validity

latent variables	AVE	Composite Reliability	Cronbachs Alpha	Rho De Joreskog
Decision making	**0.512**	**0.919**	**0.903**	**0.910**
Technological transformation	**0.504**	**0.900**	**0.876**	**0.891**
Information system	**0.515**	**0.932**	**0.920**	**0.926**

Source: Prepared by the researcher based on SmartPLS3 outputs

From the table above we remark that the averages of the explained variance were extracted over 0.5 and all the composite reliability coefficients are dsignificant and acceptable from a statistic point of view because they are greater than 0,70. In addition to Cronbachs Alpha coefficients , Rho de Joreskog coefficients, and factors loading saturated coefficients are all acceptable and significant

From those indicators we deduce that the ris a convergent validity which prove the effectiveness of used measurement model (convergent validity is realised)

B)Descriminant Validity :

Firstly ; testing descriminative validity according to Fornell -Lacker criterion

Descriminant validity of the model is tested according to Fornell –Lacker criterion the table below displays this scale after making modifications that resulted from testing the validity of criterion of the variables of this scale and which states that the square root of the extracted inequality must be higher than the connections between input latent variable of the model

Table (4): Indicators of discriminative validity according to the Fornell-Larker criterion

Information system	Technological transformation	Making decision	
		0.715	**Making decision**
	0.710	0.70	**Technological transformation**
0.717	0.635	0.70	**Information system**

Source: **Prepared by the researcher based on SmartPLS3 outputs**

According to fig 4 we remark that all significant and statistically acceptable, after looking at the diameter we remark that each variable is distinguished from the other (the value of the intersection of a variable with itself in the diameter is greater than the intersection of a variable with another variable) that proves the existence of of difference between latent variable, therefore its unsimilarity and that each latent variable represents itself.

Secondly : Analysis of the cross loading coefficients of the study model

Table (-5): cross loading coefficients for the study model

Inforation systems	Technological transformations	Making decision	latent variables items
0.610	**0.425**	**0.518**	**Q10**
0.802	**0.498**	**0.530**	**Q11**
0.766	**0.488**	**0.505**	**Q12**
0.767	**0.432**	**0.500**	**Q15**
0.781	**0.511**	**0.665**	**Q16**
0.661	**0.545**	**0.770**	**Q19**
0.698	**0.405**	**0.360**	**Q2**
0.587	**0.565**	**0.786**	**Q20**
0.377	**0.342**	**0.717**	**Q21**

0.424	**0.437**	**0.631**	**Q22**
0.453	**0.563**	**0.825**	**Q23**
0.416	**0.464**	**0.695**	**Q24**
0.470	**0.478**	**0.716**	**Q25**
0.647	**0.552**	**0.759**	**Q27**
0.455	**0.476**	**0.650**	**Q29**
0.667	**0.476**	**0.491**	**Q3**
0.502	**0.568**	**0.712**	**Q31**
0.420	**0.432**	**0.568**	**Q32**
0.478	**0.640**	**0.380**	**Q33**
0.562	**0.816**	**0.578**	**Q34**
0.208	**0.598**	**0.349**	**Q35**
0.320	**0.766**	**0.453**	**Q36**
0.426	**0.732**	**0.516**	**Q37**
0.465	**0.726**	**0.536**	**Q38**
0.552	**0.744**	**0.534**	**Q39**
0.784	**0.605**	**0.529**	**Q4**
0.555	**0.750**	**0.643**	**Q40**
0.318	**0.583**	**0.354**	**Q45**
0.689	**0.275**	**0.427**	**Q5**
0.758	**0.503**	**0.539**	**Q6**
0.637	**0.376**	**0.485**	**Q7**
0.760	**0.502**	**0.500**	**Q8**
0.560	**0.300**	**0.432**	**Q9**

Source: Prepared by the researcher based on SmartPLS3 outputs

From table 5 we remark that each item in the cotrast matrix is charged to its latent variable with greater value than other structural value in the matrix

Intersectional loading coefficients are achieved when the indicator loads of a latent variable are higher than their load on the other latent variables (for example when comparing external loading coefficients for variable of information systems, greater values were recorded than the intersectional loading coefficients for other structures which are the external loading coefficients for the technological transformations variableand the external loading coefficientd for the decision-makingchange , and so on for the rest of the variables.)

From what preceeded we arrived at achieving the standard evaluation of the research model where the analyses results match the conditions for adopting the proposed study model . for this we will move to the 2nd stage of the analysis which isconcerned with evaluating the structural model to explain and analyse the relations that link between differeb=nt latent variables of the study

3-4-1- Evaluating the structural model :

The internal model illustrates the causal relationship that link the latent variables, the quality of the structural model conformance is evaluated using three basic tests(coefficients of determinations R square, modified coefficients of determination R2 ajusted, evaluation of predictive relevance Q2) they are displayed in the table 6

Table (6): Structural model matching indicators.

dependent latent variable	R Square	R2 adjusted	Q^2
Decision making	0.602	0.594	0.288
Technological transformations	0.403	0.397	0.178

Source: Prepared by the researcher based on SmartPLS3 outputs.

It is clear from the forgoing table 6 that the value of the coefficients of determinationis significant and statistically acceptable as information systems explain about 40.3% of the dependant latent variable represented by technological developments, whereas the independant variable in this model represented i information systems and technological transformations, were able to explain the 60.2% of decision making

Also the value of the modified coefficient of determination are close and do not differ much from the values of determination and this confirms and support the validity of the values of coefficients of determination

3-5-Testing study hypothesis :

3-5-1 HYpothesis testing with paths coefficients

(A) Direct effects :

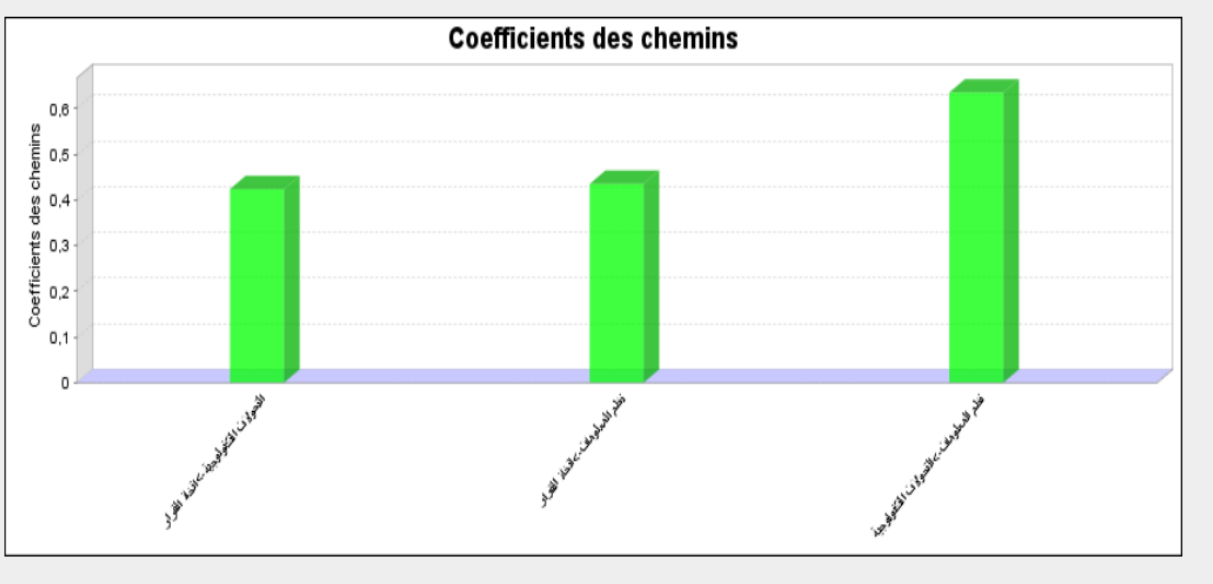
Table (7) : Direct Effects

Tracks	Beta	Std .Dev	T. value	P. value
Technological Transformations→decision making	0.424	0.113	3.75	0.000
Informations systems→ decision making	0.435	0.103	4 .243	0.000
Informations systems→ Technological Transformations	0.635	0.052	12.239	0.000

Source: Prepared by the researcher based on SmartPLS3 outputs

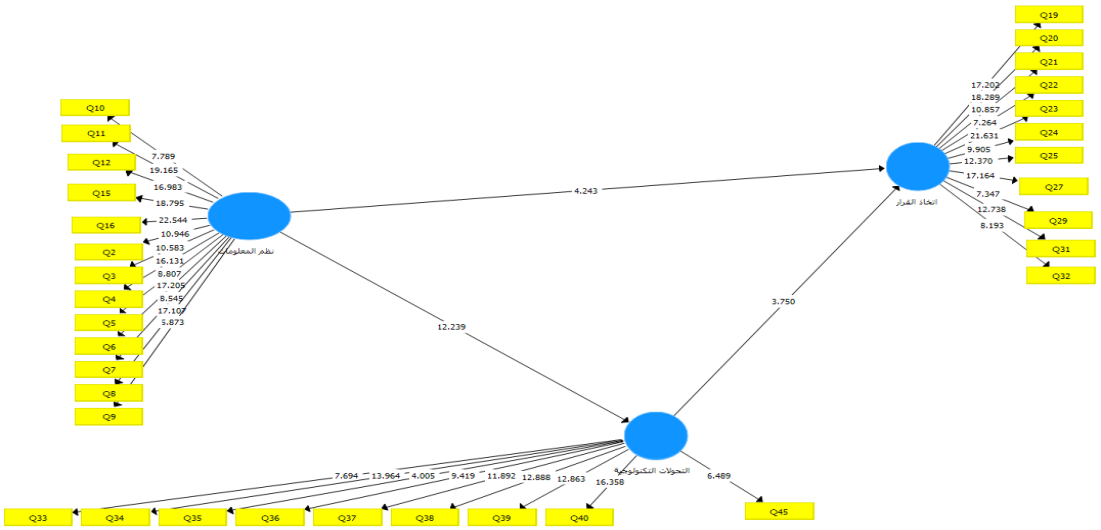
According to the results of the table 7, we conclude that there is a positive effect of technological transformations on decision-making as this effect reached (0, 424). It is also worth pointing out that the effect is significant and has statistical significance. Therefore, Hypothesis 1 is accepted and Hypothesis 0 is refused. And we say there is a direct and statistically significant impact of technological transformation on decision making just as there is a positive and statistically significant impact of information systems on decision making, where the value of the effect is (0, 438). Therefore, refusal of H0 and acceptance of H1 and we say that there is a direct and positive impact and statistically significance of the information systems on the decision making, and a positive impact of statistically significance of information systems on the technological transformation which reached (0.635), therefore, accepting H1 and refusing H0 and we say that there is a direct positive statistically significance of information systems on technological transformation and this is what is illustrated in the following figure.

Figure 3: Path parameter results: Direct Effects



Source: Prepared by the researcher based on SmartPLS3 outputs

Figure 4: Paths of the structural model



Source: Prepared by the researcher based on SmartPLS3 outputs

B/ Indirect impact:

Table (8): Indirect Effect

Paths	Beta	Std .Dev	T. value	P. value
Informations system→technological transformations→decision making	0.269	0.076	3.532	0.000

Source: Prepared by the researcher based on SmartPLS3 outputs

It is clear to us from the above table that the indirect effect of information systems on decision making in the presence of technological transformation as an intermediate variable positive statistically significant (0.269)

It is a product of direct effects and this leads us to accept the hypothesis that there is a statistically significant impact of information systems on decision making with the presence of technological transformation as an intermediate variable

C/ Total Effect

Table (9): Total Effect

Paths	Beta	Std .Dev	T. value	P. value
Informations system→decision making	0.704	0.046	15.389	0.000

Source: Prepared by the researcher based on SmartPLS3 outputs.

It is clear from the above table 9 that the total effect of the information systems on decision making is positive and significant(0.704)which explain that the information systems plays a great and important role in decision making whether directly or indirectly through technological transformations

Conclusion:

1- Through this study case, it appears that there is a match between the proposed model and the data collected from the study sample through the indications of validity and reliability of the model (the validity of the study tool)

2- There is a positive direct and statistically significant effect of information systems among the study sample at a significant level of 5% the effect value was 0.432

3-There is a direct, positive and statistically significant impact of information systems on the technological transformations of the study sample at a level of significance of 5%. The effect value was 0.635.

4- There is a direct, positive and statistically significant effect of technological transformations on the decision-making of the study sample at a level of significance of 5%. The peak of the effect reached 0.424

5- The presence of an indirect, positive and statistically significant effect of information systems on decision-making with the presence of technological transformations as a mediating variable for a sample at a level of significance of 5%, the peak of the effect reached 0.269.

6-Information systems have a direct impact of 0.435 and an indirect effect of 0.269 on decision-making in the presence of technological transformations as a mediating variable, with information systems having a total impact of 0.704 and this translates that information systems play a very big role in decision-making, whether directly or indirectly by technological transformations.

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