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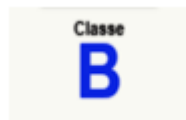
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**Success factors of upgrade programs for algerian
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structural equations modeling:
Resource dependency perspective**

**عوامل نجاح برامج تأهيل المؤسسات الصغيرة والمتوسطة الجزائرية،
النموذجة بالمعادلات البنائية: وفق نظرية الاعتماد على الموارد**

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Abstract: In an economy in transition to a market economy, the Algerian Small and Medium-sized Enterprises "SMEs" continue to suffer the adverse effects of a difficult business environment. Under these conditions, upgrade programs have been set up to support these SMEs. So, the purpose of this study is to identify success factors for SMEs that have benefited from an upgrade program.

To determine these success factors, we adopted a deductive and quantitative research strategy. A questionnaire was developed from pre-validated measurement scales. Data collection was made by Kompass International Company, an Algerian subsidiary. The response rate is around 90%. A process of purification and validation of the questionnaire was done. Data analysis was done by structural equations modeling. This article is the result of a doctoral thesis with the aim of preparing a Ph.D in administration.

Statically, two on eight (2/8) factors are significant. They are production management and marketing management.

Key words: Success factors, the performance of SMEs, tangible and intangible resources, Algerian upgrade programs, resource dependency theory.

الملخص: في ظل اقتصاد يمر بمرحلة انتقالية إلى اقتصاد السوق، لا تزال المؤسسات الصغيرة والمتوسطة الجزائرية تعاني من الآثار السلبية لبيئة الأعمال الصعبة. في ظل هذه الظروف، تم تطوير بر برامج

(*) *Corresponding authors*

التأهيل لدعم هذه المؤسسات. وبالتالي فإن الغرض من هذه الدراسة هو تحديد عوامل النجاح الرئيسية المؤسسات الصغيرة والمتوسطة التي استفادت من برنامج التأهيل.

لتحديد عوامل النجاح، اعتمدنا استراتيجية البحث الاستنتاجي والكمي. تم تطوير استبيان وتم بناءه على مقاييس تم التحقق من صحتها وموثوقيتها مسبقاً. تم جمع البيانات من قبل شركة كومباس الدولية، فرع الجزائر معدل الاستجابة حوالي 90%. ثم تم إجراء عملية تنقية والتحقق من صحة الاستبيان. تم إجراء تحليل البيانات عن طريق النمذجة بالمعادلات الهيكلية. إحصائياً، هناك عاملين من أصل ثمانية (8/2) مهمان ودالين إحصائياً، هذين العاملين هما إدارة الإنتاج وإدارة التسويق. هذا المقال مستمد من أطروحة دكتوراه بهدف إعداد دكتوراه فلسفة في الإدارة.

الكلمات المفتاحية: عوامل النجاح، أداء الشركات الصغيرة والمتوسطة، الموارد المادية وغير المادية، برامج التأهيل الحكومية الجزائرية، نظرية الموارد.

INTRODUCTION

The SME in Algeria lived a rich and complex issue. This SME has condescended from a socialist economic system deficient, a truly cruel and complicated problem (Mebtoul, 2010). Furthermore, the transition of Algeria from a planned economy to a market economy has created a new context. According to Lecerf (2006) and Mutalemwa (2015), this context directly affects the business environment. This later is operating in a market increasingly competitive, even adverse, especially for private businesses.

These new official statements have led to new organizational approaches to address the challenges confronting enterprises in Algeria. Like other enterprises belonging to developing countries, Lecerf (2006) and Krasniqi et al. (2015) argue that any enterprise is preparing to face the negative effects of globalization. In this later where only the most successful enterprises will survive. Therefore, conscient of future challenges, the Algerian government has been developing and implementing programs to promote the SME sector (Mebtoul, 2010).

For SMEs and in the macro-economic environment, the economic openness of Algeria, which began in 1989, has led to a significant development of private business (Amroune, 2014). This development concerns both the number of new businesses and their weight in the

different sectors (Assala, 2006). This is confirmed by the statistics from the former Ministry of SMEs. This Ministry confirmed that the annual growth rate sector development of SMEs is around 10%.

Despite the development of this sector, Bennaceur et al. (2007) and Amroune (2016) argue that its comparison with the rest of the world highlights the low number of SMEs per 1 000 residents. This ratio is 11 SMEs in Algeria, for all legal statuses, for the first half of 2013, against 57 for Turkey, 42 for Poland, 25 for Morocco and more than 100 for some countries of OECD "Organisation for Economic Co-operation and Development". These small results show the deficiency of employment for this sector. Besides, SMEs contribute to nearly 60% of the total employment in these countries against only about 12% in Algeria.

Entrepreneurial freedom is seriously hampered in Algeria for a variety of reasons, including bureaucracy, corruption, high taxes and a difficult legal framework, according to Boukhari (2009). Following the Doing Business 2015 report of the World Bank, Algeria is ranked in 154th place out of 189 economies. This situation is far behind the developed countries like Canada and France, which are the 16th and 31st place respectively. Algeria, in recent years, is ranked among the last in terms of economic reforms, investment and entrepreneurship. For example, starting a new business in Algeria requires an average of 22 days, with 13 procedures.

Boukhari (2009) and Amroune (2015) argue that the bureaucracy has become so blatant, that 40% of businesses do not find land for their projects. Corruption has reached intolerable levels and it seriously affects good governance in Algeria. In this context, Bennaceur et al. (2007) and Amroune et al. (2014a) argue that the weakness of the SME sector in Algeria poses significant problems with the integration of Algeria in the sphere of globalization.

So, a state of the SME sector position in Algeria is required. Bennaceur et al. (2007) and Amroune (2016) indicate that the private sector of the SME develops poorly, especially in the industry context. The statistical newsletter of Algerian SMEs 2014 shows a percentage of only 09,20 % of private SMEs which are active in the industry. These SMEs are present mainly in the food, wood, paper, steel, metallurgy, mechanics, electricity, textile, leather and various industries. The balance is divided between the SME construction sector and the service sector. This sector allocation

shows a clear preference for services (49.20%) and public works (33.26%). This SME structure attests that private investment is directed towards somewhat natural activities not open to foreign competition and where profit deadlines are very short.

In this context, Amroune et al. (2014) et Amroune (2015) also exhibit several problems hindering business development in Algeria. Commonly known problems are structural, managerial, strategic and organizational weaknesses. Furthermore, the methods of business management are obsolete. This poor situation leaves SMEs under the control of family interests, both in management and in its capital. These SMEs have been indisposed to open up foreign markets. The transfer, merger and consolidation of enterprises are rare. Acquisitions by foreign enterprises are still very limited.

Indeed, the theoretical research on entrepreneurship has highlighted the need to explore new business opportunities through innovation, proactive behaviour, risk-taking and adaptation of the enterprise to its new context. So in developing countries, to overcome this disadvantage of SMEs, public authorities have implemented programs to develop the SME sector. In Poland and Romania, the unexpected growth of the SME sector gave a great blast to the creation of employment.

The main objectives of SME support programs are the creation of jobs, the support the structural development, the identification of the SME sector markets providing advisory services and the provision for training on good business and management practices. Also, another purpose is defined in the furniture of financial assistance in form of loans or loan guarantees to finance investment and expansion of SMEs, according to Konopielko and Bell (1998); Russu and Sima (2015) and Tocan and Chindriș-Văsioiu (2015).

According to CEPMAN (2007, p. 7) and Amroune (2016), in the same perspectives, the Algerian public authorities have drawn up and implemented upgrade programs for the sector of Algerian SMEs. These programs have been developed and overseen by an advisory board for the upgrade of SMEs. Upgrade programs have accomplished a few thousand SMEs in line to include them in the arena of national and international competition and improve their performance. These programs are initiated by several national and international organizations, like the Algerian

government, United Nations Industrial Development Organization "UNIDO" and the European Commission of SMEs development. The latter defines this program by: "An upgrade program is concretely defined through its main objective, which is to assist SMEs to enable them to significantly improve their competitiveness and performance by aligning with international standards of organization and management within order to strengthen and guide their future development".

Starting from the principle that upgrade is an adaptive mechanism of the enterprise to its surrounding context. More explicitly, making the link between the problems of this research, the objectives of the study and the theories, the theory of Miles and Snow (1978) consider that the adaptation process consists of three components: variation, selection and retention. For the first component, the variation is the generation of a variety of applications borrowed from other enterprises and also by an incremental adjustment of existing practices, creating original solutions, or even random or somewhat blind processes. This component looks like, in our case, as the upgrade programs for SMEs. These programs were primarily used by other enterprises and in other countries, developed, emerging and in development.

As regards toward the second component, selection, it is defined as a process by which successful and unsuccessful practices can be specified. This second principle requires the use of predictive organizational performance indicators. It is in this principle that our study focuses on identifying success factors of Algerian SMEs and key determinants of performance.

The third component focuses on retention; it is the maintenance or shutdown of organizational practices based on the assessment of the key determinants of performance. Practices that appear to enhance organizational performance will be maintained. By cons, others that are not maintained will be eliminated or remedied. To consolidate the stage of retention, in our research, we will make sure to communicate our recommendations to national and international organizations that are supposed to make decisions to optimize these upgrade programs of SMEs. And, this is on the basis of key success factors subject of our present study.

So, in the theory of Miles and Snow (1978), the objective of this research is to give more light on the dimension "selection" of successful

practices. More specifically, we seek to identify the success factors and performance determinants for Algerian SMEs that benefited from an upgrade program.

So, the crucial objective of this research is to look for the success factors of Algerian SME upgrading programs, while trying to explain it from the perspective of the resource dependence theory. To give credibility and validity to our results, we will process our findings using a second-generation statistical technique which is modelled by structural equations with the use of LISREL software.

1. Literature review and hypothesis formulation

Initially, the formulation of the hypothesis, in its design, the upgrade program has two components: operational and strategic. In this study, we were interested in the operational component which is necessary for daily functioning. This last component is composed of tangible and intangible resources, this is according to Lily Julienti Hartini (2010); Ussahawanitchaki, (2012); Hsu et al. (2015); Grimaldi et al. (2016). These resources are presumed to have an effect on organizational performance (Zahra, 1999; Warren, 2000).

Amroune (2015) states that tangible resources include physical assets and the company's financial resources, according to Grant (1995, 2002). In the case of developing countries, physical resources refer to the level of sophistication of technology owned by companies such as machinery, equipment, tools and technologies (Grant, 2002). Technology can generate an advantage in determining the competitive position of a company (Porter, 1985).

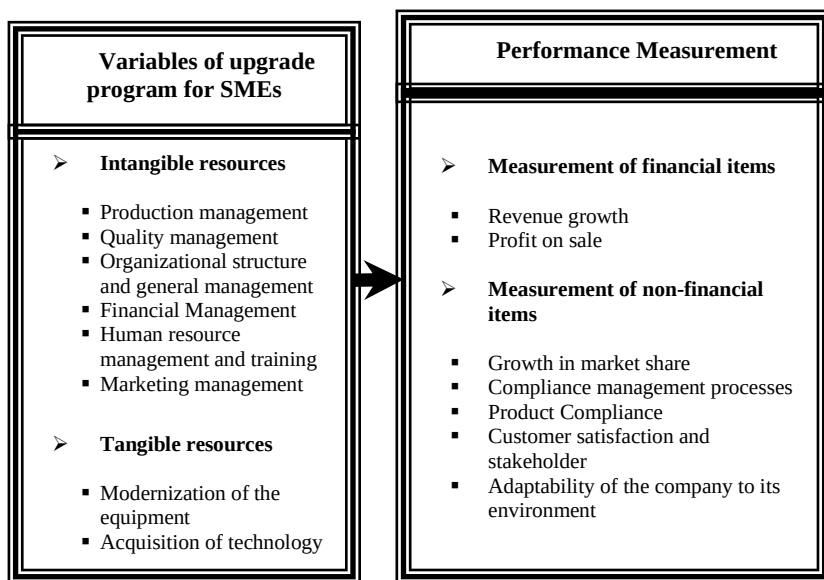
Tangible resources are easily identified and evaluated (Grant, 1995). Tangible resources are seen as the main driver for the success of the company, according to Storey (1994) and Costa et al. (2014). So, for our research, the tangible resources focus on machinery, equipment and sophistication of the technology. However, intangible resources are often tacit and difficult to codify (Conner and Prahalad, 1996; Crema and Nosella, 2014; Ullé and Kuma, 2015). They are also likely to be acquired in imperfect factor markets (Barney, 1996). These intangible resources are difficult to acquire, develop and reproduce in a company (Itami, 1987; Daou et al., 2014).

Indeed, in a behavioural perspective, intangible resources focus on the characteristics of the organization such as strategy, organizational structure, management processes and business operations (Kholi and Jaworski, 1990; Amadiou and Viviani, 2010; Lee and Wong, 2015). In this context, priority is placed on the production, dissemination and interpretation of information on customer needs (Hult et al., 2005). Therefore, the behavioural perspective and approach of management processes for the intangible resources of this research, we adopt the business processes that are presented in the management of production, management of product quality, organizational management, financial management, human resource management and marketing management. However, tangible resources include the modernization of equipment and the acquisition of technology. Therefore, we advance our hypothesis for Algerian SMEs that received an upgrade program.

Hypothesis H₁: Upgrade programs, presented in tangible and intangible resources, influence positively the performance of Algerian SMEs.

Therefore, the detail of tangible and intangible resources is presented in the theoretical model outlined in **Figure 1**.

Figure 1: Theoretical model of research.



Source: by authors

3. Research methodology

In this methodology framework which aims to verify our critical hypothesis, we proceed to a deductive, empirical and quantitative approaches. In the research methodology, we come to clarify the type of hypothesis testing strategy, determine the population and sample study, decide the research tool and how to proceed with the collection and processing of data. In the data processing operation, we determine the statistical techniques of data analysis.

3.1 Study population and sample

This section focuses on the presentation of the field study and sample construction. Of the entire population of SMEs in Algeria, this has about 1 119 339 SMEs in 2019, our study uses a sample of upgraded SMEs only. For the sample selection, we used three (3) sub-samples of SMEs that received an upgrade program. These three programs are the UNIDO program that encompasses 325 SMEs and the two programs MEDA 1 and MEDA 2 of the European Commission (EDPME) which contain respectively 445 and 580 SMEs. The third program is the program of the National Development Agency of SMEs in Algeria "NDASMEs", which has 1300 SMEs that are upgraded.

As we do not have all the SME lists available, we approached the company Kompass International, Algeria subsidiary, to benefit from its database and its computer servers in the administration of our survey. In this moment, this company holds in its database 18 000 emails for Algerian SMEs.

From this database, we selected 8 360 emails, mostly emails are of entrepreneurs and business managers. In fact, on the day of the survey, we obtained the list of 1 540 SMEs benefiting from an upgrade program. In addition, we add 1 420 SMEs emails collected from the files of the Ministry of Industry and SMEs in Algiers. So overall, on the day of the survey, our sample affects some 11 320 enterprises. This sample includes SMEs beneficiaries of an upgrade program and SMEs non-beneficiaries of an upgrade program. The purpose of the expansion of the sample is to achieve the maximum possible number of SMEs beneficiaries of an upgrade program. Lastly, the final sample that was used for the data analysis consists of some 198 SMEs.

3.2 Search tool

The goal of this research is to highlight the relationship between the independent variables of intangible and tangible resources with items that measure performance. The choice of our search tool is a quantitative questionnaire. The composition of our questionnaire consists of three sections. The first section is reserved for the enterprise's features and the entrepreneur characteristics. The second section is devoted to questions measuring the enterprise's performance.

The second section is made up of two subsections. The first subsection is made up of 6 dimensions of intangible resources and 2 dimensions of tangible resources. Intangible resources include production management, quality management, organizational structure and general management, financial management, human resource management and marketing management. However, tangible resources include the modernization of equipment and the acquisition of technology.

The questionnaire consists of questions quantified and prepared from questions or items. These items determine the measurement scales, which are grouped into factors or dimensions. The questionnaire is designed to quantify these measurement scales. For scales that measure the dimensions of tangible and intangible resources of the upgrade program and performance dimension, they are measured on a continuous Likert scale of 7 points. Furthermore, the characteristics of the enterprise and the entrepreneur are measured on a nominal or ordinal scale. In total, we have 85 questions or items measured on a continuous Likert scale of 7 points. These items are as follows: 9 items measuring the performance of SMEs and 76 items measuring intangible and tangible resources. So, of the 76 items, 60 items measure intangible resources and 16 items measure tangible resources.

Once the questionnaire was prepared, it was first subjected to content analysis by members of our research lab. Second, the questionnaire was verified by these members and sent to the members of an expert panel. Third, since the questionnaire is checked by academics, once again, it is submitted to a panel of experts, which are practitioners and consultants in upgrading SMEs. Furthermore, once the contents of the questionnaire were validated by an expert panel, it was submitted to a pilot test on a

small sample of 60 Algerian enterprises. This small sample consists of Algerian SMEs that received an upgrade program.

3.3 Data collection and survey administration

In summary, data collection was done mainly by questionnaire. It was designed on a Website hosted on the servers of SurveyMonkey. This collection used the web link by e-mail, fax and regular mail. Also, to answer our survey, data collection was made by the deposit of an invitation letter containing the Web link in some professional institutions linked to the world of business and some branches of industrial zones in Algerian provinces. Similarly, we proceeded to file this letter in the offices of some professional associations related to the business world in Algeria. The purified questionnaire web link is <https://www.surveymonkey.com/s/entreprise-algerie>. The sending of the invitation letter by the company Kompass International, Algeria subsidiary, to answer our survey, was done three times. For e-mailing operation, there was an initial sending of the invitation letter by email and two reminders in different and distant periods.

Thus, the population affected by the data collection is made by Algerian SMEs while addressing the entrepreneurs or business managers. Our sample covers geographically Algeria in its four cardinal points and all sectors; this is to maximize the variance in our variables. Finally, our population, referred to by the web link containing the electronic questionnaire, is over 11 320 enterprises. In a second phase, the enterprises that responded to our questionnaire are 1 014 enterprises, representing a response rate of 8.95%. In the first phase, we collected 349 responding enterprises. For these 349 responses, we performed the purification of the questionnaire. This purified questionnaire will be used for the actual data collection of the second phase.

4. Data analysis

As in our data analysis, specifically in verifying our hypothesis, we use structural equations modelling. The adjustment of the theoretical model to the data collected is planned by using Confirmatory Factor Analysis "AFC". Then the data analysis section will be divided into two components: the fit of the theoretical model to the data collected and the verification of the hypothesis by structural equations modelling. But first,

we must proceed to the purification of the research questionnaire and retain only the measurement scales and items that capture the maximum of variance. In this purification, we use an Exploratory Factor Analysis "EFA".

4.1 Purification of the questionnaire

Following the first data collection phase, 349 responses were collected by various means used in this data collection. The purpose of purifying the questionnaire aims to reduce the size of the questionnaire and retain the measurement scales and items that capture the maximum variance, according to Churchill (1979). The purification process of this questionnaire is developed in two stages. In the first step, we use the Exploratory Factor Analysis "AFE". However, in the second step, we use a scale to measure the magnitude of the coefficient α "alpha" of Cronbach.

Thus, in the first step of data collection, we collected 349 responses, 169 responses were used for the purification of our questionnaire and the rest will be used for the validation operation of our theoretical model by Confirmatory Factor Analysis. For Exploratory Factor Analysis "AFE", we use the analysis principal axes while introducing an orthogonal Varimax rotation type.

So, in the first stage, in our analysis of the AFE, we retain an item whose load factor is 0.50. For the result of this first stage, a total of 85 items included in our questionnaire are measured on a continuous scale. By analyzing the factorial structure, 19 items, which do not meet the above criteria, have been eliminated.

This second stage consists of the elimination of the item which would degrade more the level of α Cronbach for the measuring scale, while keeping items that record a Cronbach α meeting the requirements prescribed in the reliability analysis, also according to Churchill (1979). The result of the second stage is to do a reliability analysis of the internal consistency by estimating the value of Cronbach's α . In total, we have 85 items measured on a continuous scale. All in all, 39 items were eliminated, 19 items in the first step and 20 items in the second step.

So for 85 items, there are 46 items that meet the above criteria. The distribution of these items is 7 items for the dependent variable, which

measures performance, and 39 items for the independent variables of intangible and tangible resources. These 46 items are grouped in 17 scales of measurement. So, of these 15 scales of independent variables, 6 scales have their Cronbach's α in the range of 0.70 and 9 scales are in the range of 0.80. We believe that, according to the stipulated standards, these results are satisfactory.

4.2 Adjustment of the theoretical model to the collected data

The exploratory factor analysis, we used for the purification of the questionnaire, in the previous step. In the fit and validation of the theoretical model, we will use confirmatory factor analysis. A fitted model is verified if the theoretical model fits with the data collected. However, a model is valid if it checks internal consistency, convergent validity and discriminant validity, according to Schumacker and Lomax (2010).

The confirmatory factor analysis will also allow us to demonstrate the fit of the theoretical model to the empirical data and ensure the validity of the measuring instrument itself. This analysis will also serve to demonstrate the reliability of internal consistency, convergent validity and discriminant validity of our measurement instrument, according to Kline (1998); Ping (1998); Yang (1998); Kline (2005); Kaplan (2009).

The approach of adjustment of the theoretical model to the collected data taken to develop this analysis is somewhat rigorous. This approach is based on the implementation of five phases for each step. Indeed, in total, we have three steps. Each step deals with a part of the adjustment of our theoretical model. The last step processes the integration of the two measurement models. In the data analysis, we will use the LISREL 9.1 software under the SIMPLIS module.

In total, we have three steps,

- 1) The first step is the adjustment of the structural model measuring tangible and intangible resources variables.
- 2) The second step is the adjustment of the measurement model for the dependent variable performance of SMEs.
- 3) Step three examines the intégrtion of two previous measurement models. So we present the results of the third step below.

In the third step, we will test the fit of the model to empirical data from step 1 with the model from step 2. After the data analysis process, the integrated model is well adjusted. The model fit indexes resulting from this integration are acceptable. The chi-square "X²", which is used for the adjustment of other indexes, is very good and is significant at (P *****). This index has a value of 1.75. NFI, NNFI and CFI indexes are acceptable and are close to the value of 1. The RMSEA is acceptable and it is in the recommended threshold. The only remark is that the values of GFI and AGFI are slightly below the recommended threshold. This can be explained by the complexity of the model, which includes 43 items, as these indexes are sensitive to the complexity of the model. Moreover, the SRMR, which represents the average appreciation of the residues, is acceptable. **Table 1** shows the fit indexes.

Figure 2 and **Figure 3** present the path diagram showing the contribution factor of the integrated model and values Student t. Factorial contributions are widely acceptable above the recommended value which is more than 0.50 and the Student t values are significant and record all values greater than 1.96. Resource variables, which are grouped into six latent variables, are intangible resources. They are presented in the management of production "GPRODUCT", management quality "GQALITE", organizational structure and general management "STORMAGL", financial management "GFINANCE", human resource management and training "GRHUMAIN", and marketing management "GMARKTG". However, tangible resources are presented in two latent variables that are performance and equipment upgrades "RDMODREQ" and acquisition of new technologies "ACQTECHN". The dependent variables are presented in the latent variable non-financial performance "PRNFN", and the latent variable financial performance "PRFF".

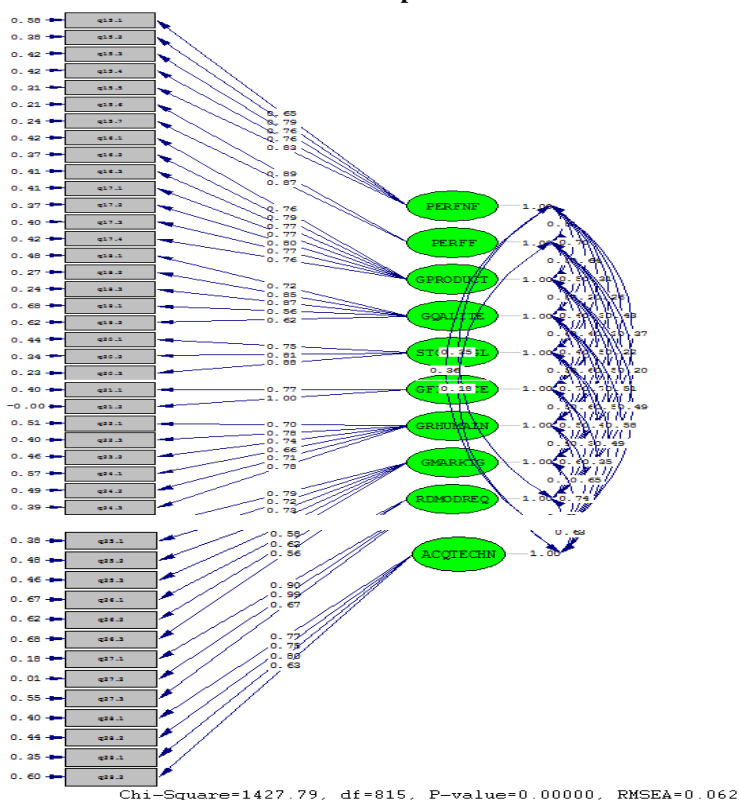
Table 1: Integration of the two measuring models of tangible resources and intangible resources with the model measuring performance

Indexes	X ²	Pp	1	X ² /dl	FI	AGFI	SRMR	RMSEA	FI	NNFI	NFI
Modified model 4:	1427.79	0.00005	15	1.75	.75	0.71	0.05	0.06	.94	0.97	.97

Source: by authors

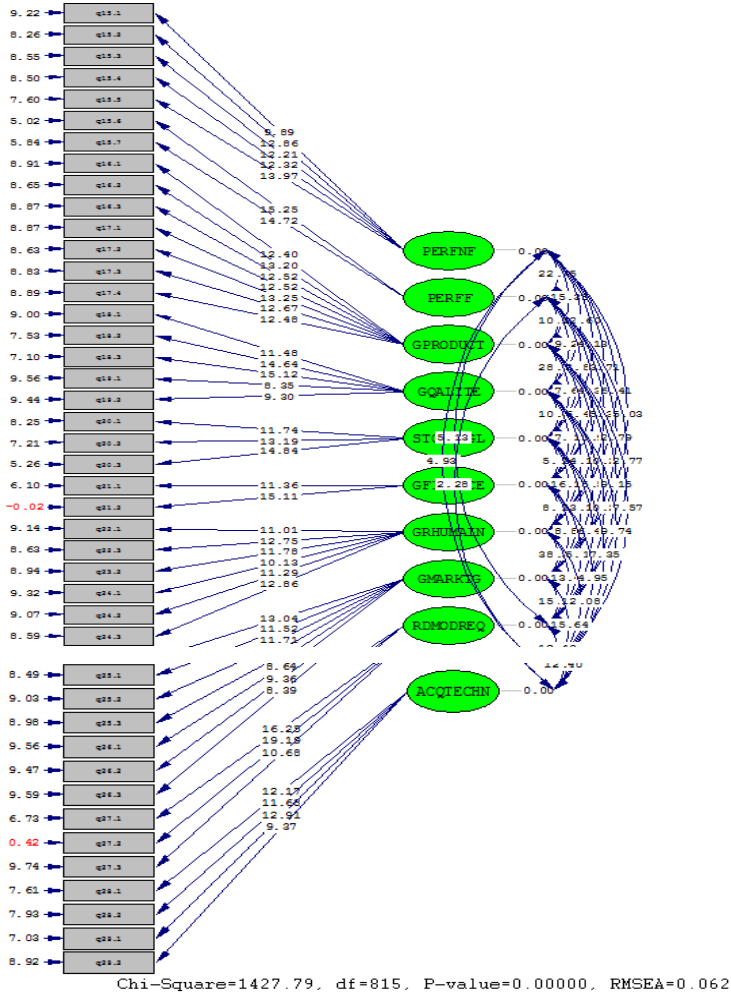
Step 3: Integration of the measurement model that forms the intangible and tangible resources with the dependent variable “performance”

Figure 2: Diagram showing the path of factor contributions of the model from step 3



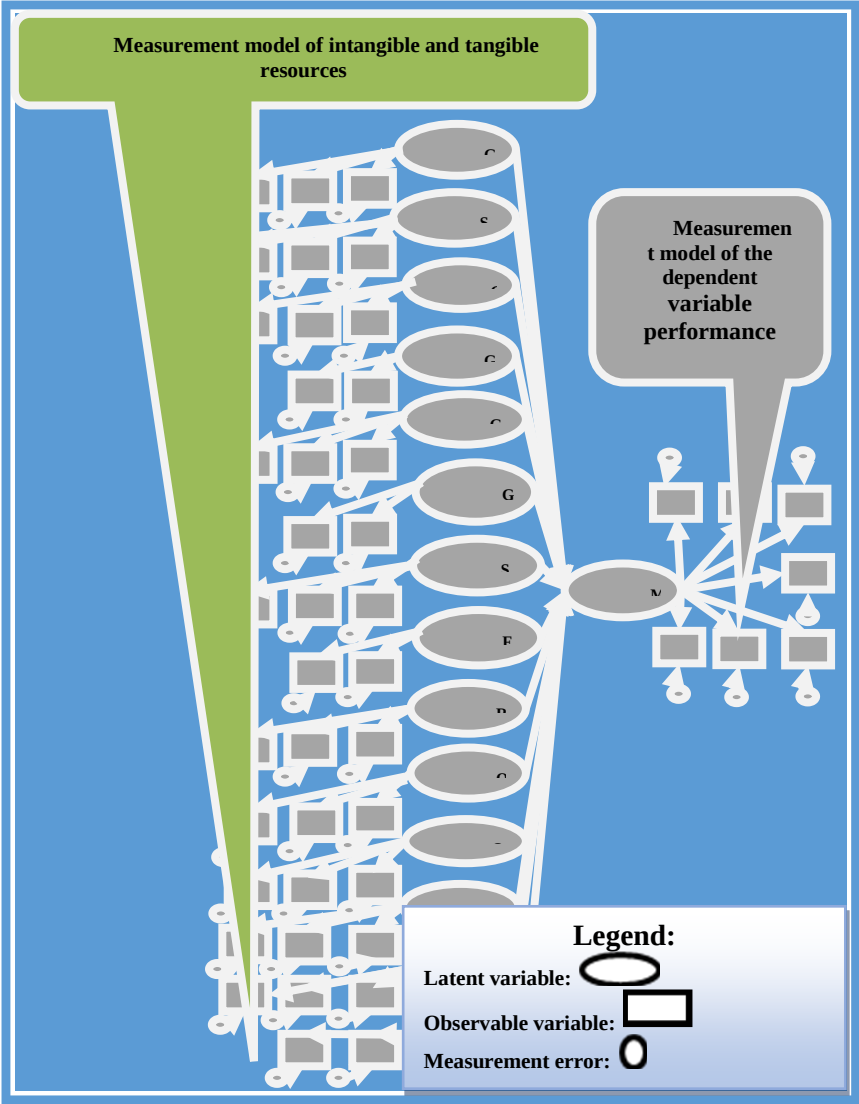
Source: by authors using LISREL 9.1 Software

Figure 3: Path diagram showing the Student's t values from the model of step 3.



Source: by authors using LISREL 9.1 Software

Figure 3: Linear relations of the full model, global



Source: by authors

4.3 Validity of the theoretical model

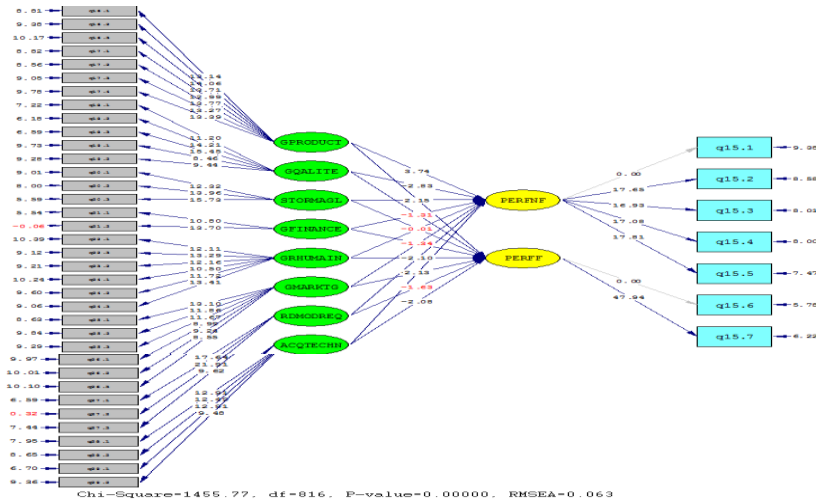
The validity of a measurement model is part of the confirmatory factor analysis (Kline, 2005). The validity of a theoretical model, as part of the confirmatory factor analysis, materializes on checking: the internal consistency of each factor, convergent validity and discriminate validity, according to Thomson (2003); Kline (2005). The measure of the internal consistency reliability of our model shows eight factors in the range of 0.90, and to 2 factors in the range of 0.80. So, our model has better internal consistency reliability. Internal consistency is good when the value of Cronbach's alpha is between 0.70 and .080, better beyond this score.

According to Roussel et al. (2002), convergent validity will be checked by the bootstrap method. This method requires that each factor contribution is statistically different from zero with a $|t| > 1.96$, $P = 0.05$. According to the above requirements, all factorial contributions presented in the fourth column are different from zero and are also well above 0.50. The student's t value of each item is also statistically significant and far exceeds 1.96. The discriminate validity checks the ability of a measure to generate different outcomes than the measures of other traits or dimensions", according to Roussel and Wacheux (2005, p. 309). We can then conclude that the test of the internal consistency of each factor, convergent validity and discriminate validity are supported for all items and for the whole model.

5. Hypothesis testing

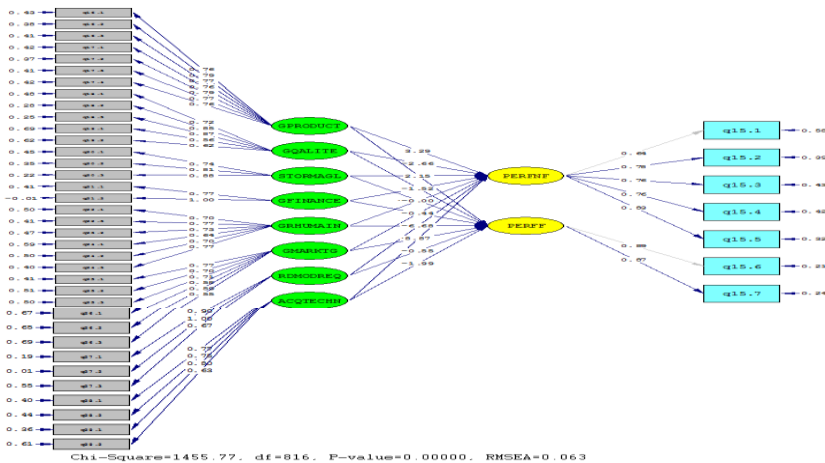
Let us recall that our hypothesis will test whether the upgrade program of the Algerian SME, presented in tangible and intangible resources, has a positive effect on the performance of SMEs. To test this hypothesis, we used the statistical technique of structural equation modelling, see **Figure 3**. The use of structural equation modelling is highly required. The robustness and credibility of this technique have increased its use by researchers, particularly in social sciences (Schumacker and Lomax, 2010).

Figure 4: Model of effect of tangible resources and intangible resources on performance with values of t of Student.



Source: by authors using LISREL 9.1 Software

Figure 5: Model of effect for tangible resources and intangible resources on performance with the values of the regression coefficients.



Source: by authors using LISREL 9.1 Software

Table 2: Results Matrix after verification of the hypothesis

Independent variables	Dependent variables	Tests of significance					Model fit indexes							
		Regression coefficient "Gamma"	Meaning "Value P"	T test (Significant t > 1.96)	Decision significance	Sense of meaning	X ²		1	x ² /d l	RMS EA	GFI	AG FI	NFI
GPRODUC T	PERFNF	<u>3.286</u>	<u>0.0005</u>	<u>3.743</u>	<u>S</u>	<u>Positive</u>	145 5.77 3	.00 00 5	1 6	.78	0.06 2	0.74 2	0.70 1	0.94 2
	PERFF	<u>2.153</u>	<u>0.032</u>	<u>2.150</u>	<u>S</u>	<u>Positive</u>								
GQALITE	PERFNF	-2.656	0.005	-2.826	S	Negative								
	PERFF	-1.521	0.192	-1.308	NS	---								
STORMAG L	PERFNF	0.144	0.482	0.705	NS	---								
	PERFF	-0.003	0.994	-0.008	NS	---								
GFINANC E	PERFNF	-0.875	0.0005	-3.533	S	Negative								
	PERFF	-0.440	0.181	-1.342	NS	---								
GRHUMAI N	PERFNF	-10.833	0.0005	-3.556	S	Negative								
	PERFF	-6.681	0.036	-2.103	S	Negative								
GMARKTG	PERFNF	<u>14.133</u>	<u>0.0005</u>	<u>3.581</u>	<u>S</u>	<u>Positive</u>								
	PERFF	<u>8.867</u>	<u>0.033</u>	<u>2.134</u>	<u>S</u>	<u>Positive</u>								
RDMODRE Q	PERFNF	-0.721	0.0005	-3.633	S	Negative								
	PERFF	-0.546	0.103	-1.633	NS	---								
ACQTECH N	PERF NF	-2.857	0.001	-3.379	S	Negative								
	PERF F	-1.986	0.038	-2.083	S	Negative								

Source: by authors

5.1 Data analysis on the effect of the upgrade program on the SMES performance

Our confirmatory model comprises 43 observable variables with 10 latent variables. So our model is not parsimonious. These 43 observable variables include 36 tangible and intangible resource variables and 7 observable variables make the latent performance variable. The variables of tangible resources and intangible resources are the independent variables. However, the dependent performance variable is composed of two latent variables, the latent non-financial performance variable "PERFNF" and the latent financial performance variable "PERFF". The two figures **Figure 4** and **Figure 5** form the structural model. **Figure 4** takes the title Model of the effect of tangible and intangible resources on performance with Student's t values. **Figure 5** takes the title Model of the effect of tangible and intangible resources on performance with values of the regression coefficients.

The data analysis was done by modelling by structural equations while using the **LISERL 9.1** software with the SIMPLIS module. As a result, the final results of the data analysis are shown in **Table 5**. First, the structural model fits well, with a chi-square of 1455.773 and a degree of freedom of 816 units, which gives a normalized chi-square of 1.78. This is a very good chi-square goodness-of-fit index used to replicate all goodness-of-fit indexes. Other indices such as RMSEA are very acceptable with a value of 0.062. Good fit indices such as GFI and AGFI are below the threshold, but they are acceptable. Knowing that our model is not parsimonious, these last two indices are very sensitive to the complexity of the model. However, the NFI is very acceptable with a value of 0.92 closest to the value of 1. The values of the t statistics and the values of the regression coefficients are shown in **Figure 4** and **Figure 5**, respectively.

Note

A comment can be made in **Table 2** with the results matrix of hypothesis testing and specifically in the column showing the Gamma regression coefficients, some values of this coefficient are not as usual in the interval $[-1, +1]$. This phenomenon may be due to strong multicollinearity in the data collected, according to Joreskog (1999).

The factors which were not significant are: organizational structure and general management "STORMAGL" with two dependent variables of non-financial performance and financial performance respectively "PERFNF, PERFF". Latent variable of quality management "GQALITE" is not significant with the dependent variable non-financial performance "PERFF". Also, latent variable financial management "GFINANCE" is not significant with financial performance "PERFF" and performance. Finally, latent variable equipment upgrades "RDMODREQ" is not significant with the financial performance "PERFF".

The factors that were positively significant are the production management factor "GPRODUCT" and the marketing management factor "GMARKTG" with two dependent variables of non-financial performance "PERFNF" and financial performance "PERFF".

Factors that were negatively significant are: human resources management factor "GRHUMAIN"; and the acquisition of new technology factor "ACQTECHN" with two dependent variables of non-financial performance and financial performance "PERFNF, PERFF". Similarly, there is the quality management factor "GQALITE" and financial management factor "GFINANCE" with the dependent variable of non-financial performance "PERFNF". Finally, the factor yield and modernization of equipment "RDMODREQ" is significant with the dependent variable non-financial performance "PERFNF".

In fact, for the verification of this hypothesis, the statistical analysis yielded the following results. In the interaction of eight latent variables of tangible and intangible resources with both latent variables measuring performance, the outcome resulted in non-significant variables, significant negative variables and other significant positive variables.

For the positive significant factors, production management factor "GPRODUCT" is significant at a threshold of " $t(816) = 3.743$, $p = 0.0005 < .05$ and $\gamma = 3.286$ " for the non-financial performance dependent variable "PERFNF" and this factor is also significant for the financial performance dependent variable "PERFF" with a threshold " $t(816) = 2.150$, $p = 0.032 < .05$ " and $\gamma = 2.153$ ".

Likewise, the marketing management factor "GMARKTG" is significant at a threshold of " $t(816) = 3.581, p = 0.0005 < .05$ and $\gamma = 14.133$ " for the non-financial performance dependent variable "PERFNF" and this factor is also significant for the dependent variable financial performance "PERFF" with a threshold " $t(816) = 2.134, p = 0.033 < .05$ " and a $\gamma = 8.867$."

For the significant positive factors, production management factor "GPRODUCT" is significant at a threshold of " $t(816) = 3.743, p = 0.0005 < .05$ and $\gamma = 3.286$ " for the non-financial performance dependent variable "PERFNF" and this factor is also significant for the financial performance dependent variable "PERFF" with a threshold " $t(816) = 2.150, p = 0.032 < .05$ " and $\gamma = 2.153$ ". Similarly, the marketing management factor "GMARKTG" is significant at a threshold of " $t(816) = 3.581, p = 0.0005 < .05$ and $\gamma = 14.133$ " for the dependent variable non-financial performance "PERFNF" and this factor is also significant for the dependent variable financial performance "PERFF" with a threshold " $t(816) = 2.134, p = 0.033 < .05$ " and a $\gamma = 8.867$."

The significant negative factors, the quality management factor "GQUALITE" is significant with a threshold of " $t(816) = 2.826, p = 0.005 < .05$ and $\gamma = -2.656$ " for the non-financial performance dependent variable "PERFNF". The financial management factor "GFINANCE" is significant at a threshold of " $t(816) = 3.533, p = 0.0005 < .05$ and $\gamma = -0.875$ " for the dependent variable non-financial performance "PERFNF".

The human resources factor "GRHUMAIN" is significant at a threshold of " $t(816) = -3.556, p = 0.0005 < .05$ and $\gamma = -10.833$ " for the non-financial performance dependent variable "PERFNF" and this factor is also significant for the financial performance dependent variable "PERFF" with a threshold " $t(816) = -2.103, p = 0.036 < .05$ and a $\gamma = -6.681$ ". The yield and modernization of equipment factor "RDMODREQ" is significant at a threshold of " $t(816) = 3.633, p = 0.0005 < .05$ and $\gamma = -0.721$ " for the non-financial performance dependent variable "PERFNF". Also, the acquisition of new technology factor "ACQTECHN" is significant at a threshold of " $t(816) = 3.379, p = 0.001 < .05$ and $\gamma = -2.857$ " for the non-financial performance

dependent variable "PERFNF" and this same factor is significant at a threshold of " $t(816) = -2.083$, $p = 0.038 < .05$ " and a gamma = -1.986 " for the financial performance dependent variable" PERFF ".

However, the Algerian enterprise performance indicators are presented in **Table 6**. These indicators are grouped into two factors that are significantly positive. Both factors are production management "GPRODUCT" with seven indicators, and marketing management "GMARKTG" with 6 indicators. In total, 13 indicators describe the performance of the Algerian SMEs. To reproduce the model of structural equations modelling, you will find the covariance matrix of the latent variables.

To produce our results, you would find the covariance matrix of the dependent and independent latent variables and the sample size used for the analysis of data which is in the order of 198 SMEs.

Table 3: Covariance matrix of the latent variables

	PERFNF	PERFF	GPRODUCT	GQALITE	STORMAGL	GFINANCE	GRHUMAIN	GMARKTG	RDMODREQ	ACQTECHN
PERFNF	1.000									
PERFF	0.810	1.000								
GPRODUCT	0.703	0.582	1.000							
GQALITE	0.638	0.534	0.846	1.000						
STORMAGL	0.302	0.217	0.480	0.595	1.000					
GFINANCE	0.255	0.300	0.411	0.462	0.365	1.000				
GRHUMAIN	0.394	0.320	0.600	0.699	0.730	0.517	1.000			
GMARKTG	0.438	0.327	0.581	0.740	0.713	0.551	0.975	1.000		
RDMODREQ	0.344	0.199	0.508	0.555	0.409	0.329	0.643	0.698	1.000	
ACQTECHN	0.346	0.161	0.489	0.579	0.488	0.348	0.651	0.769	0.628	1.000

Source: by authors using LISREL Version 9.1

5.2 Summary on the verification of the hypothesis

Our hypothesis seeks to know the positive effect of the upgrade program on performance. So the success factors of the program are presented in the management factor of production "GPRODUCT" and marketing management factor "GMARKTG". Thus, our hypothesis is only supported for the variable production management and marketing management variables on a total of 8 variables. **Table 4** summarizes the significance of our research hypothesis.

Table 4: Significance of our research hypothesis

Factors	Description of the factors	Hypothesis testing
GPRODUCT	Production Management	<u>Supported</u>
GQUALITE	Quality management	Not supported
STORMAGL	Organizational structure and general management	Not supported
GFINANCE	Financial management	Not supported
GRHUMAIN	Human Resource Management	Not supported
GMARKTG	Marketing Management	<u>Supported</u>
RDMODREQ	Yield of modernization of equipments	Not supported
ACQTECHN	Acquisition of new technologies	Not supported

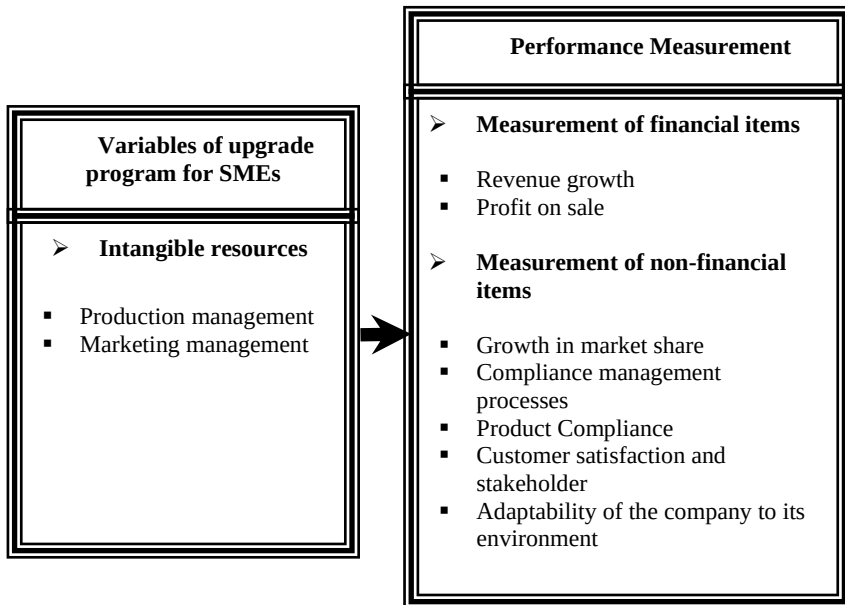
6. Discuss of results and conclusion

6.1 Discuss of results

To verify our hypothesis, we used the analysis of structural equations modelling. The hypothesis was partially supported. Two out of eight factors (2/8) were supported by our collected data. Moreover, following the results presented in **Table 4**, factors that have a positive meaning, validated by our collected data, compose the positive effect of the upgrade program on the performance of the Algerian SMEs. These factors are the

production management factor and marketing management factor. The last two factors are positively significant with two dependent performance variables: non-financial performance "PERFNF" and financial performance "PERFF". Moreover, the empirical model of the search is shown in **Figure 6**.

Figure 6: Empirical framework of the study



Source: by authors

Apparently, the validation of production management and marketing management factors could be explained by the substantial volume of demand for finished products in Algeria. There is a great request for manufactured goods, as there is a country where consumption is greater than the volume of production. To sell these products on the market, it is necessary to have a very strong marketing department. Taking into account the considerable volume of production, Algerian enterprises have started creating marketing services to sell their products and provide a link with the customer. As proof, every enterprise has recruited a sales manager. It is quite normal for the production department to work closely with the marketing department and sell the enterprise's products. With the arrival of competition with imported products of good quality and very

good prices, the Algerian enterprise starts giving great importance to the marketing activity.

However, of all 8 factors, only 2 factors are positively significant, they prove that the Algerian enterprise is not structured. Its main functions are to produce and then sell these products. For the other six factors, the Algerian enterprise suffers from this resource or, outright, does not give any importance to this feature.

Also, the upgrade program has resulted in a devaluation of financial management. Financial issues were not important to the Algerian entrepreneur. In finance, the Algerian SMEs do not count on banks because the banking system is not developed as well as the stock market. In the financing of Algerian SMEs, the entrepreneur relies on its informal network. This fact is also explained in the case of Kyrgyzstan, Yalcin and Kapu (2008) which explain that entrepreneurs rely on their family members or friends as sources of funding.

For the management of human resources "HRM", we are seeing depreciation and the great depression, its value has not enough importance among Algerian entrepreneurs. Here, the historical elements also play a big role. Despite the public authority advocating economic openness and liberalization of the market, the planner's socialist culture is still dominant. In this culture, we are seeing a lack of culture management of human resources by Western principles..

In some studies on human resources management in developing countries, such as Malaysia, Thailand, India and Turkey, Jomo (2007), Todd and Javalgi (2007), Habaradas (2008), Benzing et al. (2009) state that these countries have the same problems as Algeria: difficulties in maintaining qualified staff, lack of formal education, lack of professional training of human resources, lack of business management training for entrepreneurs, etc.

However, Amadiou and Viviani (2010) and Crema and Nosella (2014) argue that the impact of intangible resources on the enterprise's performance varies among industries for one main reason. This reason lies in the nature of intangible resources that can be sources of competitive

advantage. The nature of the intangible resource is likely to be different from one sector to another. Therefore, in our research, the study covers all sectors combined, confirming the mediocrity of the impact of intangible resources (Khalique and Bin Md. Isa, 2014). However, tangible resources do not have any impact on the performance of the Algerian SMEs upgrade.

So the success factors of the various upgrade programs for small and medium enterprises in Algeria are the factors of production management and marketing management. These factors show that the Algerian enterprise is not structured. Its main functions are production and then the sale because the SME sector in Algeria is an emerging sector. It dates back mainly to the 2 000s with the establishment of the Ministry of Small Business and Crafts. This initiative of creating a ministry dedicated to SMEs resulted from the liberalization of the market and its opening on corporate private property.

6.2 Conclusion

This research has highlighted the effect of the upgrade programs on the performance of SMEs in the context of developing countries. Our research is particularly applied to the case of Algeria. Algeria is a country in transition from a planned economy to a market economy. Consequently, several organizational and environmental factors have focused a substantial influence on the sector of SMEs. Following this inevitable transition, the SME sector in Algeria is vulnerable. To overcome these disadvantages, the authorities have implemented development programs for the enterprise. These programs are commonly called upgrade programs.

We tested an academic theory in the Algerian context. This is the resource dependence theory, it helped us a lot in explaining our research topic. It takes into consideration the business itself as an organization, the entrepreneur as the main actor and the influence of the immediate contextual environment on the business. From an organizational perspective, this theory has allowed us to understand business upgrading through the concept of organizational adaptation.

Through our statistical results, it turned out that the organizational adaptation of the Algerian company to its environment is possible. As a result of our results, the upgraded Algerian companies are well adapted to their environment, this is explained by the large rate of the significance level of the adaptation item in the measurement of non-financial performance and also of the size of the regression coefficient of this item.

In addition, theoretically, we have developed and validated a theoretical questionnaire on the upgrade of the SME. This questionnaire will be applicable to any context of developing countries. To apply this questionnaire to any context of developing countries, you should collect data on the context of the country in question and after purifying the questionnaire with exploratory factor analysis, adjust the theoretical model of the research data collected by confirmatory factor analysis. To test the hypothesis, you should follow the testing of hypotheses approach in the data analysis section. Specifically, this research also allowed us to understand the impact of upgrade programs on the performance of the Algerian SME beneficiary of an upgrade program. In fact, until this date, little or no research has studied the upgrade program deeply, especially in the case of Algeria.

Thus, theoretically or on the theoretical contribution side, we have developed and validated a theoretical questionnaire relating to the upgrading of the SME. This questionnaire will be applicable in any context of developing countries. To apply this questionnaire to any developing country context, it would be necessary to collect data on the context of the country in question, purify the questionnaire by exploratory factor analysis, adjust the theoretical research model to the data collected by an analysis confirmatory factorial and then follow the process of checking the hypotheses developed in the data analysis section which was carried out by the statistical technique modelling by structural equations.

Furthermore, our practical and managerial contributions are intended for the executives of the Ministry of Industry, Small and Medium Enterprises and the Promotion of Investment and its National Agency for SME development "ANDPME", particularly in Algeria, and for entrepreneurs and business managers, for governments in developing countries and international organizations for aid to SMEs and generally to business partners. Thus, the results of this research allow us to provide the

above bodies of an evaluation tool and decision support for the optimization of government to upgrade the SME programs. This tool will allow these organizations and entrepreneurs in developing countries, particularly in Algeria, to optimize their business performance and further develop human skills and the tangible and intangible capabilities of SMEs.

Especially for Algeria, the results of this study allow us to capitalize on the experience gained in previous programs, mainly as we studied upgrade programs in an aggregated manner. More practically, the study originally handled business functions that were necessary for daily functioning. Therefore, we concluded that the Algerian enterprise is not structured. Based on our research, the Algerian SME encourages a bazaar economy, with the production and sales of manufactured products. It is recommended that the concerned Algerian public authorities develop further the quality of the management function, financial management, human resources management and innovation, and the acquisition of technology. Algerian SMEs downright suffer from these resources.

Our recommendations for the Algerian public authorities and business leaders, as part of the upgrade program, are to provide training and refresher courses to optimize these resources. Our attention goes to the public authorities responsible for the upgrade program, to establish training institutes and training for human resources, not only for enterprises wishing to upgrade but for managers and employees of Algerian enterprises. The creation of these training centers will be established on a national scale in sufficient quantity and quality of training for its customers. Research has shown a deficiency in the acquisition of technology. With this in mind, we recommend that the public authorities create technology centers providing technical development and want to place networking organizations for the acquisition of international technology to the benefit of these SMEs.

Indeed, despite the results of our present study being oriented to Algerian SMEs, the study covers all developing countries. Although these research findings are applied to the Algerian context, that context is just a practical case. The study can be applied to all developing countries while collecting data on the country in question. In this sense, we can have general rules applicable to all developing countries. Indeed, the repetition

of the study in multiple cases could help make respectable theoretical contributions.

Like other scientific studies, the present study does not escape the presence of certain limitations and weaknesses. These limits allow the study not eligible to be generalized widely. In fact, the study is perceptual. The measures of research variables were made according to the perception of the entrepreneur or manager of the SME. We also add that the performance of financial measures is not objective. These financial performance measures are transmitted by entrepreneurs as perceived. So, these financial data are not delivered by the enterprise according to what is included in the accounting records. This is due to privacy issues of accounting data. We even found a total absence of data transcribing business performance in the ministry because of the lack of a single database.

To avoid perceptual measurements, we suggest conducting longitudinal studies over several periods. In these longitudinal studies, performance measures, including the measurement of financial performance items, would be based on actual figures in the accounting registers. In addition, our research has investigated all industries across all sectors. We recommend that sectoral studies, on the impact of the parameters of the upgrade program on performance, will be made. Wherever possible, the proposed research will allow us to take the success factors and determinants of significant performance upgrade program performance for each business separately.

Since the upgrade is a mechanism of adaptation for SMEs to their contextual environment, the concept of adaptation is taken as a characteristic of organizational change. We propose to study deeply, by quantitative studies, the effect of upgrade programs on the adaptation of the enterprise. This is taking into account that adaptation is a dependent variable or a mediating variable between the dimension of the upgrade program and the performance of SME. Particularly for Algeria, it is advisable to make comparative studies between three different upgrade programs for Algerian SMEs. This study, when completed, would allow us to draw key success factors and performance indicators for each upgrade program. It will also enable us to take the strengths and weaknesses of each program and select the best program. In this way, we

could capitalize on the experience and optimize upgrade programs already underway. Finally, the research recents all the arguments necessary to generalize these results on the entire population of Algerian SMEs which includes more than 1.2 million companies.

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