



**Computer outsourcing, as technological management, within  
modern business administration; the Ecuadorian case**  
**La externalización informática, como gestión tecnológica, dentro  
de la administración empresarial moderna; el caso ecuatoriano**

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**Abstract**

**Introduction:** the outsourcing process, as an activity, is used by any computing company to reduce internal work; specifically, in Ecuador it is capable of increasing productivity by serving as indirect recursion of the administrative paradigm. **Objective** : provide Ecuadorian business society with strategies for continuous improvement of operational skills and flexibility. **Method:** using qualitative methodology, it was possible to define the external computing services and the perplexity of outsourcing when performing management functions. **Results:** having achieved the centralization of commercial competencies, delegating technicalities to computer operators and specialized suppliers, technological maximization was achieved; but perceiving, in deference, to using paradigms of preeminence, the indicators of Information and Communication Technologies at the service of the client. **Conclusion:** the risk of outsourcing was obtained as a divalent condition; confirming, improper cost as an operational risk. Thus, as a complement, it was feasible to project hybrid technological

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management for the year 2025.

**Keywords:** administration; computing; enterprises; outsourcing

### **Resumen**

**Introducción:** el proceso de la externalización, como una actividad, es utilizado por cualquier empresa informática para reducir el trabajo interno; específicamente, en Ecuador es capaz de incrementar la productividad al servir como recursividad indirecta del paradigma administrativo. **Objetivo:** dotar a la sociedad empresarial ecuatoriana de estrategias para la mejora continua de la destreza y la flexibilidad operacional. **Método:** mediante la metodología cualitativa fue viable definir a los servicios externos computacionales y al realizar funciones de gestión, la perplejidad de la externalización. **Resultados:** habiéndose logrado la centralización de las competencias comerciales, delegando tecnicismos a los operadores informáticos y proveedores especializados, se consiguió la maximización tecnológica; pero percibiendo, en deferencia, al utilizar paradigmas de preeminencia, a los indicadores de las Tecnologías de la Información y la Comunicación al servicio del cliente. **Conclusión:** como condición divalente se obtuvo al riesgo de la externalización; confirmando, al costo impropio como un riesgo operacional. De tal modo que, como complemento, fue factible proyectar a la gestión tecnológica híbrida para el año 2025.

**Palabras clave:** administración; empresas; externalización; informática

### **Introduction**

Initially, to address the study of the outsourcing method, descriptive research had to be used as a peculiarity of the analysis. Therefore, the rhetoric of the research was directed through a pair of Web Bibliographic Databases; ResearchGate and Scopus case. Thus, these two were references of literary research and thus, it was feasible to filter quotes. It is then that the impact index, Digital Object Identifier (DOI), could be expressed as a valid indicator to establish processes. Visibly, the proposed objective revealed the concept of Management Information Systems (MIS); projecting technological suitability, in favor, of Ecuadorian commercial regulation.

Consequently, in Ecuador, being a third world country, the business reality and administrative lag are notorious; such that these are appendages of obsolescence.



Above all, with outdated technology, which does not support the establishment of managerial competencies. So, the corporate spirit and its determination do not demand employment; rather, the dismissal grows. However, it is at this point that executives must put emphasis on Business Process Reengineering (BPR) and Managerial Management, having acumen in decision-making. But, "...aiming for the outsourcing process to create opportunities to improve competitiveness and allowing the economic reactivation of a company" (Kaczmarczyk and Flassbeck, 2023, p. 439). Furthermore, as pilot plan, in Ecuadorian cosmopolitan cities, Quito and Guayaquil case, the outsourcing process must be articulated. More, there are agreements to institutionalize it and its application establishes customer service; increasing productivity, reducing workload and developing market strategies. It is from there that every company can benefit from its profitability; resolving economic deficiencies and increasing, for the better, the Customer Satisfaction (CSAT) index.

### **Development**

Unfortunately, over time, this approach will create crossroads. The same, which must be resolved on site and give priority to hiring before dismissal; seeking to improve the situation of the country. Reasonably, this is when business innovation comes into play; together with the institutional terms for conflict resolution. Therefore, the labor market must yield to the standards of quality and outsourcing, standardize. Hoping that technology creates acceptable work environments and is a condition for establishing motivational strategies; ensure employee well-being and business success.

### **Administrative Variability of The Outsourcing Procedure**

Every businessman, when acting as manager, makes the company grant contracting schemes and market services; in the latter, optimizing costs is the ideal method. Due to this, "...the business environment indicates that, if operations are in process, they must be operational and if outsourcing supports them, they must work together" (Khraishi *et al.*, 2023, p. 27). Thus, this is how the idea emerges that the business vision provides established methods; accommodating the need. However, these must be part of the Communication and Information area and be equipped with technological roles. At the same time, they must become precursors of new techniques



of operational systematization; benefiting managerial Total Quality Management (TQM) and being effective when differences between workers arise. “The same, which hinders business development and becomes indirect actions, within the framework of the processes, as a cause of low production; consistently, in business administration” (Sapel and Hopmann, 2023, p. 8).

But to do this, it is necessary to reveal additional, non-influential factors within the structural terms of business administration and that these become favorable environments for restructuring; with the flexibility as a reference and optimization as management. However, the results are not always flattering and because of this, “... these activities should focus on proactive strategic planning and creation of valuable content adapted to premium operators; giving congruence to quality” (Antony et al., 2023, p. 113). Therefore, it is clear to infer that these should be part of the opportunities provided by an integration process and that virtual communication systems 2.0 put the institution as a priority. At the same time, they are intelligent ways to align Information and Communication Technologies (ICT) with the Ecuadorian business system; trying to get positive results.

### **Outsourcing Preeminence Of Technological Maximization**

The Management Information System (MIS) can be understood as compendium between individuals, databases and analysis methods. The same ones that support decision making, consider strategic planning and demand operational direction. So that in this way, “...the global context of a company is seen. Where there is a relationship between the user, computing and the economic aspect, as guarantees, between the institution and its technological future” (Lestari et al., 2023, p. 627). Noting, that managerial action is the provider of outsourcing resources; by having technology as a support for commercial activities.

Because of this, around the world, there are university centers that support modern business management and Information and Communication Technologies (ICT); case University of California, Los Angeles (UCLA) and Anderson School of Management (ASM). It is then that, in this pair of institutions dedicated to research, business technological activities are applied as those responsible for management.



Allowing you to participate in administrative efficiency, outsource suppliers and support innovative technologies as disseminators of their efficiency.

Though, this literal is not the only factor that accredits technological outsourcing. Since its actions are disseminated through programmed schedules for investment and expansion, it is notorious for the massification of data; anticipating Big Data (Bandara *et al.*, 2024; Gopal *et al.*, 2024; Liu *et al.*, 2024). Moment in which a company needs financial capacity to support information processing; typifying, with the International Business Machines (IBM) Ecuador subsidiary. Because of this, macro companies execute outsourcing processes to market products at an important level. Using the multinational Apple<sup>1</sup> and the sale of its electronic devices as a pilot model; Smartphone case. So, in this regard, history indicates that, for more than 15 years, technology has dictated its economic returns; since the presentation of the iPhone 3G<sup>2</sup> by Steve Jobs.

At that moment, it was there when outsourcing gave rise, as guarantor, to the Management Information System (MIS) and according to 'Forbes' Magazine, 2009 edition of December 15, Apple obtained a net profit, worldwide, of 100 million American dollars in one year. Obviously, for its achievement, "...this had to do with the projected business image and the digital marketing that circulates on Internet; with outsourcing actions, specialized personnel were hired" (Varghese *et al.*, 2021, p. 12).

### **Divalent Determinants Of Business Technological Outsourcing**

The primary economic configuration of a company depends exclusively on cost reduction. So much so that, "...the corporate pyramid structure accepts dependence on outsourcing. That is to say, by having economic elasticity, every company must promote its action processes and focus on the consumer" (Nila and Roy, 2023, p. 63); considering that advertising marketing gives advantages by having as its projection an extensive. Though, to do this, there must be virtual tools applicable to systematization; also, with the focus on management competencies. In such a way, the administrative change comes from the application of intelligent Web platforms for Business Process Management (BPM); AuraQuantic<sup>3</sup> case and the collaborative support it provides for

<sup>1</sup> High-end computer supplier company located in California (USA).

<sup>2</sup> Launched on the market on July 11, 2008.

<sup>3</sup> Payment Website platform that, through Artificial Intelligence (AI), hosts all types of structural diagrams in the cloud; thus, establishing business advancement. Also, as part of Microsoft Azure, it is compatible with Office 365.



workflow diagramming.

It is then, when the outlining of processes must be, necessarily, in accordance with any critical event and as a measure, collaborative online work must be developed; Lucidchart<sup>4</sup> platform case. Therefore, control of activities can be planned and formal parameters established to achieve correct negotiation. Then, for this, the diagramming of administrative processes must be extended; likewise, it is advisable to use at least one portal dedicated to the Top-down and Bottom-up technique; Business Process Modeling and Notation (BPMN)<sup>5</sup> case. If there is interest in Personal Computer (PC) software, Business Process Windows (BpWiN).<sup>6</sup>

As a result, these specialized tools for virtual technology are a key component for accessing a competitive market. It is worth noting that outsourcing offers the benefit of increased efficiency in handling administrative challenges. Since, in a globalized world, the current market is prone to agile attention; granting certainty by being endorsement of the Management Information Systems (MIS) and compliance<sup>7</sup> to the client. But, prioritizing outsourcing as intervener of managerial action and avoiding insecurity in the business technological environment; perceptibly, it is a safe way to optimize the multi-level structure and reduce operational costs. So, in Ecuador, the Cámara de Comercio de Riobamba, in the CCR Official Bulletin (2023), expresses that "...the outsourcing methodology, processed effectively, provides significant savings and this, referring to medium-sized companies, is around 3.6 % annually of assets" (p. 8). But, if this strategy is not aggressive, it may incur losses in the said period; causing the institutional image to decline.

### **Hybrid Administration Of Outsourcing Management Systematization**

Considering the heterogeneity of outsourcing, as a hierarchical auxiliary principle of the managerial and technological administrative processes, we can argue that the contracting method has to be applied based on the client's need; as long as management provides solutions and assistance. In this case, based on an operational lever, management must project quantifiable rates for savings and with demonstrative

<sup>4</sup> Website, trial and paid, revealing advanced features in collaborative diagramming; designing flows and processes.

<sup>5</sup> High-level programming language that creates autonomous schemes within the scope of strategic management.

<sup>6</sup> Software application, used to model commercial business processes; defining critical paths and milestones.

<sup>7</sup> Also known as Proof of Service Compliance Model (PSCM).

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performance curves, apply statistical analysis for contracts; maintaining a, flexible, supplier portfolio. Consequently, the modular layout of a strategic plan must align Information and Communication Technologies (ICT) with the objectives planned for action; reconfiguring requirements. So, this will reduce the weaknesses and for this, the ideal is to use Administrative Mathematics. But typifying, as lines of action, the evaluation matrices:<sup>8</sup> Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE); together, to the SWOT analysis (Strengths, Weaknesses, Opportunities and Threats).<sup>9</sup>

So, to achieve it, technological resources must be found that promote balance points in the face of existing threats; reducing the cost of services. Thus that, "...the processing of information is framed in data processing and this is a reference for outsourcing as a provider of contracting; excluding outsourcing" (Yang and Dong, 2024, p. 547). More than obviously, in this regard, the company must have an infrastructure compatible with modernity; firstly, computational logistics as a regulator of the productive scale. Taking as an example the actions of an Ecuadorian sausage company, 'La Ibérica'. The same one that preserves excellence, being lines of action, in Business Process Management (BPM) paradigm and being located in a strategic city; Riobamba.

Speaking of the technological aspect itself, based on this company, we assure you that a supplier must offer means that effectively support management. If the parties engage in active negotiation; overall, proven economic flexibility. Due to this, all information must be redirected towards migration and virtual platforms, be considered as ways for this operation; facilitating intervention and maintenance. But this is the time when we must resort to Business Process Reengineering (BPR); hoping that categorization responds and does not affect production.

Though, "...in the case of outsourcing and its computational aspect, established in communication networks, the company must provide itself with attributes; case of the topological network Virtual Local Area Network (VLAN)" (Hu et al., 2024, p. 4342). Reasonably, being the architect of cutting-edge technology, he establishes digital

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<sup>8</sup> Tools used by companies to analyze issues that have an impact, positive or negative, on market growth and sustainability.

<sup>9</sup> Quadratic matrix arrangements used for decision making and the development of strategic business plans.



communication with specialists; integrating suppliers, clients and future plans. In such a way, that each event has a solution and its intervention projects maintenance; having consulting<sup>10</sup> services as a conditioning base.

Nonetheless, if we talk about networks, we must address the issue of hardware outsourcing. By indicating that, "...updating is optimal to avoid the expiration of computer equipment and the renewal of its components, it is just enough so that the institution does not become obsolete" (Alsaffar and Ayed, 2024, p. 91). Avoiding hardware obsolescence as the reason of the Computer Audit<sup>11</sup> and preventing any company that attempts innovative production from excluding communication with the client; being the direct beneficiary when there is a certain investment.

But it is necessary to take care of this investment and for this, it is mandatory to hire at least one security system. As long as pharming and phishing, being part of the adware universe, are not allowed; neither does hacking. It is then when the tools of Free Software (GNU)<sup>12</sup> are appreciated; above all, by having the Linux Operating System. Without forgetting that, to continue in this technological line, it is necessary to have professionals who know the subject. Mainly, hardware protection by having computer forensics as a proactive response and opting for the Kali<sup>13</sup> Linux distro; together with its tools.<sup>14</sup>

### **Indirect Recursion Of The Administrative Outsourcing Paradigm**

Under the patterns of the temporal procedure, we will always opt for the idealization of technology as an appendix to the continuous improvement of a company. So much so, that we have to name the computer catastrophes as a prelude to administrative degradation and we must also consider Strategic Communication as a literal that encompasses digitalization. So, through an ideal approach, it is destined to the channels for measuring results; all, within the Reengineering of Processes.

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<sup>10</sup> Nowadays, every company needs this professional service. Since it provides guidance in process optimization and cost reduction; in Ecuador, PricewaterhouseCoopers (PwC) is the pioneering firm.

<sup>11</sup> Located in Quito (CE), Auditores y Consultores (AENA) as a pioneer firm.

<sup>12</sup> 'GNU's Not Unix', project launched by Richard Stallman in 1983 (USA).

<sup>13</sup> It is based on Debian GNU/Linux, contains free source code and is dedicated to computer audit services; together, to Systems and Network Security Consulting. Likewise, it is aimed at the business environment; but attaching vulnerability tests.

<sup>14</sup> Even though Linux, according to the specialized portal 'Statcounter', barely retains 4% of the market (June/2024).





Therefore, business marketing provides reliable tools and reference to customers as an extremely important point. All at once, innovative digital strategies are outlined and leadership is linked to the product to be marketed; projecting a 2.0 image and marketing it virtually.

Subsequently, each entity must have a contingency plan and be part of the strategic planning of the forecast; being a record of events. It is essential to be careful that the monetary aspect becomes evidence of recursive subcontracting and that it does not become outsourcing.

At the same time, commercial security has always been a factor to consider. Since, it is highly demanded when finding weaknesses in online transactions; 'DeUna! Delivery'<sup>15</sup> mobile application case. That is, this resource must be used for the good of the client; even better, if PC applications are emerging resources within security. Since commercial management does not consider the quality of this service; presenting vertical scalability as a resource. To the advantage of this, "...its cost is not affected. Since user manipulation entails connectivity with the provider; satisfying their needs" (Roy Chowdhury *et al.*, 2024, p. 46).

It is in this sense that technology invites the virtual modality and the cloud market, as a strategic unit; gives rise to demand. Asserting that the information, in the client-server scope, is stored based on the proxy nomenclature; case of AS/400<sup>16</sup>. Which is why any Berkeley Software Distribution (BSD)<sup>17</sup> distro is advisable for protection; above all, with pirate interference. But, at least in Ecuador, migration to cloud platforms is highly rejected. Because the suppliers themselves are in charge of managing a client portfolio and their commission; obtaining benefits.

So, this flexibility is present when proposing the advantages of the computing infrastructure; with the digitalization process as a precursor to virtual services. But highlighting the omnipresence of Cloud technology, its low price and business focus.

## **Conclusions**

Based on the objective, it was feasible to address technicalities to the computing

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<sup>15</sup>For both iOS and Android, with the sponsorship of Banco Pichincha (BP), it serves as a manager for online payments and collections without commissions.

<sup>16</sup>Mega Servers owned by the International Business Machines (IBM).

<sup>17</sup>NetBSD case.



providers and thus, before the Ecuadorian business society, strategies were instituted to project continuous improvement and operational flexibility. Then, the outsourcing strategy was fulfilled and for this, compliance tactics were considered; in achieving business objectives. Consequently, the main purpose became the maximization of the Ecuadorian business society and improving the continuity of the organizational experience. To do this, it was necessary to consider the prerogatives and reflect on their arguments as key decisions. To the extent that business society becomes aware of the decision and the designed objectives, they will be imposed in the medium term; within the outsourcing advance. This is the moment when the company has to rely on the market and its experience to choose an ideal supplier. At this point, the secondary objective is achieved as systematic management of hybrid technology; this being a miscellany to establish effective procedures.

But, considering your prerogatives and reflecting on your arguments will make this a key decision. As long as the business society becomes aware of the decision made and the objectives designed, they are imposed in the medium term; with relevance, as an opinion of the outsourcing advance. However, this is the time when the company has to depend on the market and equally, on its expertise in choosing a capable supplier. Asserting that the corporate strategy must be specified in the definition of the service and within the required period, a contract must be established; as long as the time factor is negotiable. This is when the company must visualize methods to establish correct negotiations and structure them based on costs. In this way, at least an antagonistic procedure is projected and established that proposes solutions to negotiation by compromise; such as trust in the agreement. Thus, the associated procedures are responsible for establishing externalized sequences and are considered as congruence models; these are understood as a second SWOT analysis. But to do so, the general guidelines of the matrices must be analyzed: Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE); so that lines of action are provided. Then, accordingly, with a new outsourcing process, the impact caused will lessen; logistics, cost and infrastructure in the same way. However, there will only be a benefit in considering technological outsourcing as a possible solution to the loss



of information; noting that this, more than anything, comes from incidents. Taking into consideration the human aspect as the origin of the wrong entry of data and the difficulties of the electric index; more than anything, with its variations. Similarly, the Software aspect and its hacking infiltration. Registering computer viruses and malware as an edge of attack to massive Databases; case of banking. It, is at this moment that the theft of information is the beginning of the institutional debacle and loss of corporate prestige.

Finally, the decision is optional for the client to accept outsourcing as a basis for continuous improvement of the quality offered. Revealing that, in Ecuador, this literal was already established by the Cámara de Industrias y Producción (CIP) in 2023 and endorsed, in 2024, by the Unidad de Apoyo Politécnico Emprendedor (UAPE);<sup>18</sup> being, an entrepreneurship center of the Escuela Politécnica Nacional (EPN). Recognizing that, when this process is correctly exposed, it is possible to reduce up to 3.6% of the annual investment. Much more, if the activities are projected to the year 2025 and thus the economic situation of the country can be improved.

### **Bibliographic references**

- Alsaffar, Q. S. and Ayed, L. Ben. (2024). Implementation of Parallel Applications on the Hypercube Topology by Using Multistage Network. *Lecture Notes in Networks and Systems*, 892. [https://doi.org/10.1007/978-981-99-9521-9\\_7](https://doi.org/10.1007/978-981-99-9521-9_7)
- Antony, J., Sony, M. and McDermott, O. (2023). Conceptualizing Industry 4.0 readiness model dimensions: an exploratory sequential mixed-method study. *TQM Journal*, 35(2). <https://doi.org/10.1108/TQM-06-2021-0180>
- Bandara, F., Jayawickrama, U., Subasinghage, M., Olan, F., Alamoudi, H. and Alharthi, M. (2024). Enhancing ERP Responsiveness Through Big Data Technologies: An Empirical Investigation. *Information Systems Frontiers*, 26(1). <https://doi.org/10.1007/s10796-023-10374-w>
- CCR Official Bulletin. (2023). The projection of small and medium-sized businesses in the center of the country. *Cámara de Comercio de Riobamba*, 13(1).
- Gopal, P. R. C., Rana, N. P., Krishna, T. V. and Ramkumar, M. (2024). Impact of big

<sup>18</sup>Institutional and national entity that supports the student community in the search for ideals for the generation of small and medium-sized businesses within Ecuador.



- data analytics on supply chain performance: an analysis of influencing factors. *Annals of Operations Research*, 333(2–3). <https://doi.org/10.1007/s10479-022-04749-6>
- Hu, X., Cai, H., Alazab, M., Zhou, W., Haghghi, M. S. and Wen, S. (2024). Federated Learning in Industrial IoT: A Privacy-Preserving Solution That Enables Sharing of Data in Hydrocarbon Explorations. *IEEE Transactions on Industrial Informatics*, 20(3). <https://doi.org/10.1109/TII.2023.3306931>
- Kaczmarczyk, P. and Flassbeck, H. (2023). Foreign direct investments and the dynamics of trade and capital flows: Schumpeterian insights for sustained development. *Global Policy*, 14(3). <https://doi.org/10.1111/1758-5899.13209>
- Khraishi, A., Paulraj, A., Huq, F. and Seepana, C. (2023). Knowledge management in offshoring innovation by SMEs: role of internal knowledge creation capability, absorptive capacity and formal knowledge-sharing routines. *Supply Chain Management*, 28(2). <https://doi.org/10.1108/SCM-05-2021-0256>
- Lestari, N. I., Hussain, W., Merigo, J. M. and Bekhit, M. (2023). A Survey of Trendy Financial Sector Applications of Machine and Deep Learning. *Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST, 467 LNICST*. [https://doi.org/10.1007/978-3-031-23944-1\\_68](https://doi.org/10.1007/978-3-031-23944-1_68)
- Liu, P., Zhang, K., Dong, X. and Wang, P. (2024). A Big Data-Kano and SNA-CRP Based QFD Model: Application to Product Design Under Chinese New E-commerce Model. *IEEE Transactions on Engineering Management*, 71. <https://doi.org/10.1109/TEM.2022.3227094>
- Nila, B. and Roy, J. (2023). A new hybrid MCDM framework for third-party logistics provider selection under sustainability perspectives. *Expert Systems with Applications*, 234. <https://doi.org/10.1016/j.eswa.2023.121009>
- Roy Chowdhury, D., Nandi, S. and Goswami, D. (2024). Cost-effective live video streaming for internet of connected vehicles using heterogeneous networks. *Ad Hoc Networks*, 153. <https://doi.org/10.1016/j.adhoc.2023.103334>
- Sapel, P. and Hopmann, C. (2023). Towards an ontology-based dictionary for



production planning and control in the domain of injection molding as a basis for standardized asset administration shells. *Journal of Industrial Information Integration*, 35. <https://doi.org/10.1016/j.jii.2023.100488>

Varghese, J., van Alen, C. M., Fujarski, M., Schlake, G. S., Sucker, J., Warnecke, T. and Thomas, C. (2021). Sensor validation and diagnostic potential of smartwatches in movement disorders. *Sensors*, 21(9). <https://doi.org/10.3390/s21093139>

Yang, W. and Dong, Y. (2024). Outsourcing and the variability of corporate performance. *Applied Economics Letters*, 31(6). <https://doi.org/10.1080/13504851.2022.2140105>

### Interest conflict

The authors declare no conflicts of interest.



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