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How can information and communication technologies (ICT) improve decisions of renewal of products and services and quest and selection of new suppliers?

¿Cómo pueden las Tecnologías de Información y Comunicación (TICS) mejorar las decisiones de renovación de productos, servicios y la búsqueda y selección de nuevos proveedores?

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Content

ABSTRACT:
Bounded rationality in managerial decisions is one of the most recognized issues in management science. After discussing the issues of bounded rationality, the way in which ICTs (Information and Communication Technologies) can enhance the effectiveness in the decisions related to the renewal of products and services and the quest and selection of new suppliers is analyzed. It is argued that the use of ICTs mitigates some of the limitations that are present in this type of managerial decisions.
Keywords Information and Communication Tecnnologies (ICT), Decision Making, Bounded Rationality.

RESUMEN:
La racionalidad limitada en las decisiones directivas es una problemática reconocida en las ciencias administrativas. Una vez discutida la problemática de la racionalidad limitada en los directivos, se analiza la forma en que el uso de las TICs (Tecnologías de la Información y Comunicación) puede mejorar la efectividad en la renovación de productos, servicios y la búsqueda y selección de nuevos proveedores. Se argumenta que el uso de las TICs, mitiga algunas limitaciones en este tipo de decisiones directivas.
Palabras clave Tecnologías de la Información y Comunicación (TICS), Toma de decisiones, Racionalidad Limitada.

1. Introduction

Managers strive to make good decisions. They must deal with several limitations that have been identified in management science. There are various kinds of limitations: those derived from scarce resources such as time as well as information, others caused by perception and bias besides the ones related to cultural beliefs. Nevertheless, using Information and Communication Technologies (ICT) strategically, some of these limitations can be reduced, yet paradoxically and concurrently, new limitations appear. Thus, managers must understand how to take advantage of ICT, particularly in decisions related to the renewal of products and services and with the quest and selection of suppliers.

1.1. Limitations in managerial decision

Managers ought to be aware of their limitations, and the available strategies to minimize them. For example, March & Simon (1958) explain the concept of bounded rationality of the manager as the set of constraints in terms incomplete knowledge of alternatives, their consequences, and the subjective character of rationality. Which means that managers do not have the time or the capacity to identify all the possible courses of action in a given situation, neither the possible consequences of all feasible alternatives. Furthermore, the set of alternatives the manager identifies are defined by their own perception, which means that his/her rationality has a subjective character. This relative rationality has been demonstrated by Kahneman (2002), who proves that there are more reasons for a limited rationality that are anchored in our perceptions and conceptual models of reality. This is especially related to time limitation. It must be noted that managerial work has been characterized as hectic, fragmented, and problem driven (Carlson, 1951; Mintzberg 1973, 2009, Matthaei, 2010), and does not leave time for reflection, making it even more difficult for managers to make smart decisions (Floren, 2005). But, besides having managers that do not have time to develop elaborated processes of analysis, cultural characteristics also have impacted in the way decisions are made, for example; when the acceptance of unequal distribution of power is higher a less active participation of subordinates in decision making appears (Hofstede, 1991); this shortens the view of the decision maker and thus reduces the quality of the decision. Additionally De Geuser & Fiol (2003) discovered that managers have to deal with a solution mentality that does not always allow them to understand the situation. The solution mentality comes from the expectation that managers should be fast solution providers. In the pursuit of fulfilling this expectation, managers provide solutions without taking the time to identify the problem, and as a consequence give solutions to non-existent problems. All these limitations impose a great challenge for managers, fortunately the tools that ICT offers help to minimize some of these constraints.

ICT`s are being used in our societies at an unrelenting pace, according to ITU (International Communications Union) the specialized agency for ICT of the United Nations, while in the year 2000 there were 400 million internet users in the world, in the year 2015, the world reached 3.2 billion internet users. We use ICT every day: when we make a phone call, watch television, make a financial transaction or check our e-mail. In the organizational settings, dependence on ICT is growing. Sophisticated applications are developed to make more efficient communication between employees, with actual and potential clients, suppliers, distributors and even with governmental agencies. This reality of a more interconnected society invites managers to take advantage of ICT, in particular it is argued that ICT broadens the reach and speed of information, allowing for the possibility of better decisions to be made.

2. The use of ICT in the decision making process

One of the natural steps in the process of decision making that demands time and effort is the quest and collection of information. As can be seen in Figure 1, the use of ICT decreases the time required to gather information, and it improves access to new information. We need less time than before to have information, ICT tools like e-mail, mobile phones, social networks,

video sharing, international television, and online management information systems can give us the information we need much faster than before. At the same time these tools allow us to access much more data than before; information flow and interconnectedness is greater, which makes access to information more widespread. This is how ICT enhances the capability of the manager to have more information in a faster way, minimizing the constraint of the limited amount of time and information managers face when making decisions.
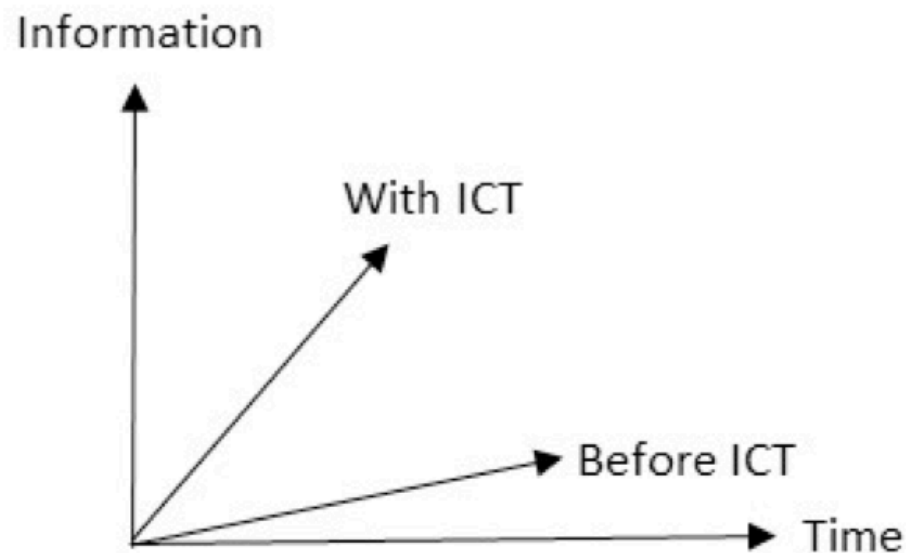

Figure. 1. Impact of the use of ICT in the process of gathering information

Besides the progress in time efficiency, there is another important use of ICT in the decision making process: ICT helps to deal with the challenge of appropriate communication of decisions in organizational settings. Organizational communication must flow properly in the hierarchical structure, from the top to the bottom, vice versa and laterally. In this sense, Lukić, (2014) concluded that ICT provides information which had been only traditionally available to one or few levels to all the organization, achieving more effectiveness in the decentralization of decisions. These processes require time, but most of all accuracy, which can be improved by allowing subordinates to interact, and have immediate access to information and decisions made by senior and middle management using ICT.

Along with the increased efficiency in collecting information, and the enhanced accuracy in communication of management decisions, endeavors such as, the renewal of products and services, identification of new suppliers and engagement with stakeholders can be enriched with the use of ICT.

2.1. Renewal of products and services

Through the use of ICT, clients have more access to information than before. They look through the web for information of products and services they need to satisfy their needs. This client sophistication forces managers to innovate more precisely and faster on the solutions their companies offer. Fortunately, the information captured through ICT can help managers in the process of understanding the behavior of consumers and the solutions available in the market.

Understanding consumer behavior and communicating with them requires research and effort; however, with the proliferation of Internet, it is now possible to do it faster, cheaper and more accurately. Information of the profiles of the people searching the web, on what they are looking for, the channels used and the type of device used to do the queries, is offered by companies such as Google and Facebook. Google works to give information on what the user is looking for, and helps organizations to be visible to actual and potential clients. In particular, Google Analytics offers solutions to understand the interaction of customers with different online marketing channels. For example, it has specialized tools that provide useful information to recognize how customers are using mobile technologies and to measure the success of social networks campaigns with clients. One more service which provides data and offers tools to

analyze what people is searching on the web; develop market research projects and understand industry trends is Google Insights.

Another organization, Facebook, the company that created one of the most used social networks in the world offers marketing services for companies of all sizes. Through the analysis of the enormous amount of data of its users, this company is capable of designing campaigns for specific sets of potential clients achieving high advertising impact. The quality of the information they manage allows them to locate clients geographically, and to offer a comprehensive interpretation of customers' needs and interests. Google and Facebook both use the information generated through the use of ICT, to help managers and their teams to make more accurate decisions. Yet, companies can use the information registered in their daily contact with actual and potential clients, to make more reliable analyses and consequently make more rational decisions. Because comprehension of consumer behavior and communication is more efficient and complete thanks to ICT, the choices regarding product development are more accurate.

Besides doing more effective advertising and consumer behavior analysis, ICT can also help managers understand the competitor's strategies of the firms they lead. After exploring the web and other telecommunication technologies, managers can easily identify existing and new competitors in diverse geographical areas. By analyzing competitor marketing strategies, new products and services can quickly be identified and examined. Yet, it is also possible to get information of market prices, by studying the online platforms of several retailers that are engaged with e-commerce. This is relevant because managers need to make decisions on product development that must take in to account the features, prices, and delivery options offered by competitors.

The process of creating and developing products and services, can be fueled by understanding consumers and competitors. This can be done speaking directly to consumers and analyzing competitor's strategies openly in the field. Notwithstanding, ICT can complement and enrich this process. As shown in Figure 2, the effectiveness in the renewal of products and services using ICT can be increased in two ways, with consumers and with competitors. Primarily, as more consumers are using ICT, the opportunities to understand them improve, and also the number of available communication channels. Additionally, as companies are starting to use more ICT in order to communicate with clients, options to analyze competitor's actions become more evident. Understanding the industry is a prerequisite in order to renew products and services, this is why managers minimize their information constraint by using ICT to understand consumers and competitors.
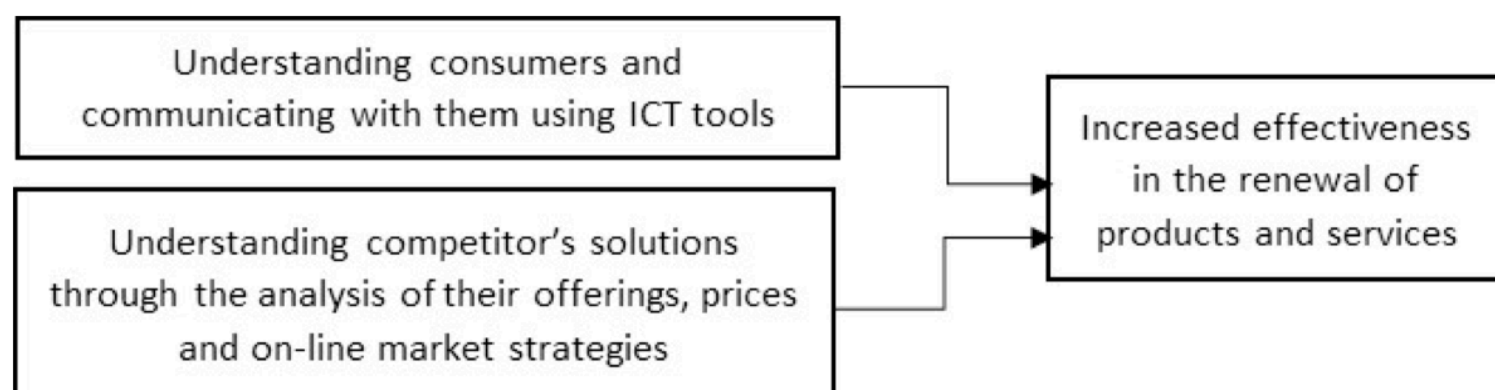
Figure 2. Use of ICT in the process of renewal of products and services.

2.2. Quest and selection of new suppliers

In the same way that can be done with competitors, managers can identify existing and new suppliers in diverse geographical areas, using ICT platforms. In these sense Colin, Galindo, & Hernández, (2015) founded that the use of ICT strategies in the Supply Chain Management, increased competitiveness in Mexican organizations. Thus, managers can use online

marketplaces, collaborative business networks, and online platforms designed to find suppliers of specific geographical areas. In the case of online marketplaces, it is important to mention at least three examples: Amazon, ebay and Alibaba. Amazon is one of the biggest online retailer in the United States, and in 2015 it launched Amazon Business Marketplace, a solution that allows companies to find the products they need, comparing prices from different suppliers instantaneously. In a similar way ebay offers Business to Business (B2B) services, where suppliers offers products that are organized by industry, product category or brand. Yet, the biggest platform of global wholesale is Alibaba, a company that helps small and big companies especially from China, India and Pakistan, to sell their products to companies in other countries. Although these online marketplaces help managers to find key suppliers for their projects, IT organizations have develop solutions to connect companies in a more sophisticated way.

One collaboration business network that goes beyond a supplier web is Ariba; the companies that are part of this initiative come from more than 190 countries around the world. This platform allows collaboration between buyers and suppliers that makes possible the exchange of more than 71.000 purchase orders and more than 224.000 invoices daily. The costly and slow processes based on paper are eliminated, and in exchange joining companies have access to a vast network of global suppliers. Tradeshift is another hub of collaboration for buyers and suppliers, designed to integrate with the majority of software used by companies. This software integration allows connections between companies that are more efficient, which saves time and money; the platform also helps to discover and select new suppliers based on ratings from other buyers. Additionally managers can find platforms that are specialized in the promotion of suppliers of specific geographical areas. In the case of the American continent on example is Oztomeca, for a specific country like Korea the platform is gobizkorea and for North America the case is Thomasnet. This is how managers using ICT can make better decisions in relation to the quest and selection of suppliers from all over the globe, and engage in collaboration processes that will help them save time and money.

3. Conclusion

In the digital era, managers must use ICT not only to minimize decision making constraints; but to strategically engage with stakeholders. The sustainability of the organizations they lead, depends significantly on the quality of the relations they achieve with clients, employees, and suppliers. Using ICT tools, managers enhance their understanding of the behaviors of clients and competitors, making better decisions in relation to the design and renewal of products and services. Likewise, managers find, select and start collaborating more efficiently with new and existing suppliers. Additionally, ICT improves the reliability, speed and interaction of communication of decisions with employees. The use of ICT improves managerial decisions of renewal of products and services, quest and selection of new suppliers and communication of decisions to employees.

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