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Zouhour Smaoui-Hachicha

*Faculté des Sciences Economiques et de Gestion, University of Sfax, zouhour.hachicha@fsegs.rnu.tn*

Jamil Chaabouni

*Faculté des Sciences Economiques et de Gestion, University of Sfax, jamil.chaabouni@fsegs.rnu.tn*

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# FLOORS CONCEPT FOR STUDYING E-COMMERCE DEVELOPMENT: PERTINENCE WITH REFERENCE TO TUNISIAN CONTEXT

Smaoui-Hachicha, Zouhour, Faculté des Sciences Economiques et de Gestion, University of Sfax, Route de l'Aédrôme Km 4 – B.P. 1088 – 3018 Sfax –Tunisia, zouhour.hachicha@fsegs.rnu.tn  
Chaabouni, Jamil, Faculté des Sciences Economiques et de Gestion, University of Sfax, Route de l'Aédrôme Km 4 – B.P. 1088 – 3018 Sfax –Tunisia, jamil.chaabouni@fsegs.rnu.tn

## Abstract

E-commerce development is described in literature with reference to divergent points of views having many insufficiencies. In order to palliate these limits, this paper proposes a new construct, namely floors, corresponding to growing development levels. This construct permits e-commerce development influencing factors analysis. This paper proposes a model specifying factors influencing e-commerce development in Tunisian hospitality sector. A technology-organization-environment model was adopted to model the variables shaping development. Variables maintained in the model are affected to development floors.

**Keywords:** *Floors, E-Commerce Development, Hotels, Influencing Factors*

## 1 INTRODUCTION

E-commerce is gaining importance in a sustained rhythm. E-commerce sales have registered 29% growth in 2008 reaching 20 milliards of euros (FEVAD, 2008). Online tourism weight is still growing from a year to another reaching 45% of e-commerce total volume in 2005 (Benchmark Group, 2006). For instance, travel and tourism were most frequently sold products online in Italy, in 2006 (Country Commerce 2007). 31% of French tourists have bought their travel online in 2008 (Journaldunet, 2009). In spite of multiple e-commerce adoption researches, few authors have looked into the adoption level question (Teo and Pian, 2004, p.457). Companies' classification according to e-commerce development has been discussed in literature principally through three criteria: implementation process, (Chan et Swatman, 1998), adoption speed (Dinlersoz et al., 2007, Hong and Zhu, 2006) and e-commerce development process (Earl, 2000, Molla and Licker, 2005). Each classification perspective presents limits making its application problematic. Critics made on the different classification criteria lead to introduction of a classification according to e-commerce development floors. Floors development notion hasn't been provided in literature. Floors classification starts from e-commerce development process without considering evolution logic.

This paper tries to propose the floors concept and to test its pertinence in relation to Tunisian hospitality ground. Floors construct constitutes a companies' positioning alternative with respect to their e-commerce activities. This concept seems to be suitable to study e-commerce development influencing factors, which analysis is rather rare in a developing country context. Some studies listed in literature concern Brunei, Singapore, Eastern Europe (Damaskopoulos and Evgeniou, 2003, Seyal et al., 2003, Teo and Ranganathan, 2004). The interest of this field for Tunisia results from the fact that it is about a developing hotel country where tourism industry recorded a revenue of 2641 million Tunisian Dinars in 2006 and 2856 million Tunisian Dinars in 2007 (Skander, 2008). Tourist entrances are mainly organized by tour operators (Hazbun, 2002). From statutory and infrastructures points of view, Tunisia was among the first Arab countries to connect to Internet in 1991 and one among the first ones in the world to promulgate, in August 2000, a law for electronic exchanges and e-commerce general organization (El Louadi, 2002). Nevertheless, few Tunisian hotels adhere to e-commerce (Smaoui Hachicha and Chaabouni, 2004, Smaoui Hachicha, 2008).

The paper objective is to clarify floors construct and to proceed to a classification of e-commerce development influencing factors in touch with floor in which company is positioning. The various

companies positioning approaches and the floors construct are presented in the first part. The second part deals with e-commerce development influencing factors and their affectation in floors.

## **2 WHICH E-COMMERCE DEVELOPMENT IN HOTEL COMPANIES**

This section objective is to specify companies position with regard to their e-commerce activities as preliminary stage of diagnosis such as indicated by Benbasat et al. (1984) and Nolan (1979, p.125). E-commerce concept is clarified at first, followed by an analysis of the various companies positioning optics with regard to e-commerce development.

E-commerce definition was subject of several discussions (Ammami et Rowe, 2000, Bitouzet, 1999). Some authors tried to group together definitions as ranging from "micro" to "macro" vision according to Magal (1997) or from extensive to restrictive according to Mennis (2003) and Bitouzet (1999). Bitouzet (1999) suggests as alternative to these definitions to consider the exchange value analysis. Value analysis "aims to increase the offered services by the exchange as well as to reduce resources dedicated to obtain the same services ". Through this value analysis, e-commerce can be defined as a value creation process through networks. Value creation is increasing with e-commerce development. So, the created value would depend on company positioning in e-commerce development.

Literature identifies various companies' classification optics with regard to e-commerce development. The various approaches in terms of implementation process, adoption speed or development process present limits. Floors, which correspond to increasing development levels, are proposed as one positioning alternative allowing mitigating the other optics limits.

### **2.1 E-commerce described according to implementation process**

Researches based on implementation process took change theory as reference (Chan and Swatman, 1998, Cooper and Zmud, 1990). Implementation, according to change theories authors, is described as an organizational change process extending through an important time period (Chan and Swatman, 1998). Classification would be made through e-commerce implementation process levels where company is positioned. In BHP Steel Company case study, Chan and Swatman (2002) analyze an e-commerce B2B implementation in 3 levels: early implementation, e-commerce gateway and Internet based e-commerce. This classification sets the problem of the most adequate process to describe implementation (Chan and Swatman, 2002).

Van de Ven et al. (1995, p. 512) warn against predictions which can occur when researchers expect a definite levels number or a definite process. Such an initiative could result from seclusion in preconceived change theories. According to Chan and Swatman (1998), to model e-commerce implementation process, several elements are to be considered: various implied actors, necessary activities and tasks to lead implementation, implementation reality longitudinal study, in-depth studies to process understanding. Several authors underline change processes complexity not always following preconceived linear models (Lichtenstein, 2000, Styhre, 2002, Vas, 2005). Cooper and Zmud (1990, p.125) underline that if levels are considered as activities, some of them could occur in parallel. The model can ignore IT applications and implementation processes variety in companies. Context transformations and human action complexities and ambiguities let appear changes with probabilistic and uncertain trajectories. The consideration of predetermined calendars in ordered and invariable sequences doesn't leave place to adjustments / revisions in touch with context.

### **2.2 E-commerce described according to adoption speed**

According to innovation diffusion theory, various adopters are classified through diffusion rate. Diffusion rate is defined as the relative speed with which an innovation is adopted by social system members. Resulting groups would be innovators, early adopters, early majority, late majority and laggards. Laggards in e-commerce are described as thinking that e-commerce is not still completely developed

and that sales percentage is too weak to affect significantly companies' competitiveness (Garcès et al., 2003, p.5). They consider that they have time to wait and see what others make and how market will evolve. Early adopters find that Internet practices are important while early majority is more neutral (P. Murphy et al., 2003, p. 247). Buhalis et al. (2004, p.124) found that the vast majority "of the private sector/ individual tourism businesses in Greece (...) belong to the laggard or late majority adoption stages. Only a few innovative players are at the early adoption stage". Respondent's distribution into adopters and non adopters, at first time, does not differentiate between companies having adopted different e-commerce sophistication levels. This distribution does not allow distinguishing companies having partially adopted this innovation of those who adopted none of its elements. An informative mass gets lost by classifying all adopters in a single group. To compensate for this gap, some authors consider adopters subgroups (Hong and Zhu, 2006, p. 8, Teo et al., 2003, p. 91).

From adopters classification according to their innovation adoption speed, at the second time, raises adoption time measure problem which isn't an easy task (Rogers, 1995, p. 129). The inaccuracy constitutes one of this initiative limits because respondents are brought to remember time when they adopted the new idea.

### 2.3 E-commerce described according to development process

E-commerce development is presented by several authors as following a process (Molla and Licker, 2005, Siegel, 2000, Vescovi and Iseppon, 2002). It would be possible to identify development levels which the companies' majority cross, an evolution where learning takes place (Earl, 2000, Prananto et al., 2001). If a company does not acquire in question level lessons it risks returning there because it will have gaps during its route. According to Van Akkern and Cavaye (1999), companies begin adopting e-commerce at an entry level, and then become familiar with Internet. Through time, they advance to more sophisticated Internet technologies adoption. According to Nolan (1979, p. 125), levels models' interest lies in the identification of where the company comes from, which are problems resulting from management errors and those appearing from natural growth, what brings the future to try to develop appropriate management strategies.

Sequential nature of these models, leading to hierarchical progress hardly reversible, countered limits. The company can decide to make a commitment from the beginning in a superior level or to jump one or several levels to benefit from e-commerce advantages and/or to answer its business partner's requirements. According to Van de Ven et al. (1995, p. 512) progress from a lower, simpler state to a superior, more complex state constitutes a possible road. But, organizational development can follow regressive road such as the organizational decline developed by Kimberley and Miles (1980) or a pathological road such Merton (1968) bureaucracy depraved cycle.

Table 1 recapitulates the limits associated with e-commerce development presentation through adoption speed, implementation process and development process.

Classification optics	Classification	Limits
Implementation process	In levels according to organizational reference : *Unfreezing, *Moving *Refreezing	*implementation process linearity *some levels can occur in parallel *choice of most adequate process to describe e-commerce implementation
Adoption speed	According to group: *Adopters: innovators, early adopters, early majority, late majority and laggards *Non adopteurs	*loss of a part of informative mass by classifying in a single group all adopters *do not inform about e-commerce integration degree within the company * adoption time measure problem
Development process	In levels according to technological reference :	*Evolution process linearity *hierarchical progression hardly reversible

	*Static site, *E-commerce *E-business	
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*Table1. The companies' classification optics according to e-commerce development and associated critics.*

Divergent points of view's study gives opportunity to develop new vision which can have wider explanatory power than initial perspectives (Van De Ven et al., 1995).

**2.4 E-commerce described according to development floors**

Each of the theoretical perspectives exposed higher concentrates analysis on partial aspect of a complex phenomenon. Floors construct allows exceeding linearity limits blamed to implementation and development processes classifications and aggregation criticized in adoption speed classification.

*2.4.1 Floors construct*

In opposition to levels notion which sends back to evolution process periods, floors notion refers to stability during a trajectory. Floors construct is clarified by two characteristics differentiating it in particular of levels notion. First, floors are associated to trajectories being linear or not with regression possibility, while levels are associated with processes. Second, floors notion allows recognizing that floors have common constituent elements; nevertheless, their level of control varies from a floor to another.

a- Floors are associated with trajectories being linear or not

According to Van de Ven et al. (1995), change processes are described and explained by four basic theories: life cycle theory, teleological theory, dialectical theory and evolutionist theory. On the basis of these typical ideal theories, hybrid theories, which combine use of the four change engines, built themselves. These theories track down cycles and phases sequences describing change and development. Given that companies can bifurcate for several possible roads, Van de Ven et al. (1995, p. 535) call up for non linear dynamic systems study to bring out change trajectories. In a similar way, technological trajectory notion is defined by Dosi (1982, p. 154) as a group of possible technological directions whose outside borders are defined by the technological paradigm nature it self. If we admit that e-commerce introduction and development constitute a change at company level, then the existence of multiple trajectories is possible as noticed by several authors (Brousseau and Chaves, 2005, Craighead and Laforge, 2003, Doolin, et al., 2003, Mariotti et al., 2001).

According to these authors, e-commerce development does not follow a univocal road. The sequential nature of e-commerce adoption by small and medium-sized firms and the existence of levels model are not completely demonstrated (Craighead and Laforge, on 2003, Fillis et al. 2004). Floors notion makes possible to study the question differently. It considers that changes within an organization don't necessarily follow predictable model characterized by development phases which are sequential, occurring in hardly reversible hierarchical progress. A company can begin e-commerce development with a more or less advanced floor and can in its progress jump some floors. According to a study led on a 192 industrial small and medium-sized firms sample, Lefebvre et al., (2005, p. 1449), found that 79 % of firms get through development levels in order, while 21 % jump one or several levels. These authors explain these companies' non hierarchical progress by three reasons (p. 1452). First, experience lack creates big expectations bringing little e-commerce experimented companies to jump levels. So, e-commerce adoption is widely influenced by powerful actors. Then, aiming to answer important customers or entrepreneurs' requirements, some companies jump through one or two levels. Finally, electronic platforms offer advanced Internet features with a friendly mode of use in sector-based electronic programs, for example.

b- Floors notion allows recognizing previous floor's constituent elements partial control

A company's presence at a more mature e-commerce development level often implied, for levels models, all precedent levels' knowledge, experience, skills and expertise accumulation (Chan and Swatman, 2004, Lefebvre et al., 2005, p.1446, Prananto et al., 2004). According to this vision, companies having not resolved level difficulties necessary to control before moving will not be able to evolve for the following levels (Prananto et al., 2001). That is, a company, whose e-commerce development situated in phase i, developed all precedent levels constituent elements and began some elements of phase i. Reality observation does not still confirm this levels succession. It isn't necessary that superior floors presence is conditioned by previous floors constituent elements complete control. Magal et al. (2001) analyze 50 companies' Web sites by noting, for each of them, presence or absence of 20 Internet e-commerce applications. Starting from this analysis, the 20 proposed applications were allocated to concerned floors. Every case was individually taken to verify if the superior floors elements existence implies previous floors constituent elements control. On 50 cases presented by the authors, only 3 match with an evolutionary logic. Sites majority show marketing aspects without controlling informational component. Gherissi-Labben et al. (2002) have found that only 51 % of Tunisian hotels, having a Web site, answer booking e-mails with an answer time average of 55, 4 hours among which only 13,6 % answer all e-mail questions. Thus companies stand on static site floor at least without having mastered the answer to booking e-mails (connection floor). Frey et al. (2003) conclude that only 62 % Swiss hotels having Web sites presenting at least on-line marketing Relationship tool answer booking e-mails. Companies could thus be placed on integrated e-commerce floor without having mastered connection floor. That is a company's e-commerce development is identified on floor i will not necessarily have adopted and mastered the precedent floors elements totality.

By studying companies decision processes, Nutt (1984, p. 414) considers that leaders do not use the processes prescribed by theorists for a good decision-making. This author (p. 420) asserts different decision process existence according to implied key activities nature and intensity, among others. For every level, key activities are defined and detailed in sub activities to be considered as options by decision-makers. From a company to another one, chosen key activities and sub activities considered differ as well as their intensity. By arguing by analogy between decision-making and e-commerce development, it would be possible to define a key activity for every floor. Companies, in their e-commerce development could engage various floors sequences among which key activities' nature and intensity can differ from a company to another. For static site floor for example, key activity would be ownership of informative Web site. However this activity's intensity could differ according to informative content proposed (the information's nature) and contents' quality. A company having developed a given floor can be characterized by a given floor's key activity's intensity but also by previous floors' key activities variable intensities. Thus, it isn't excluded that a company intensifies previous floors' key activities while being situated on a superior floor. The key activity "secure on-line payment" control could bring the company to perfect "informative site" key activity of a lower floor. A company could also give up a superior floor's key activity and remain with those of lower floors. This regression could be due to a concentration will on lower floors perfection or to actors or influential factors change in e-commerce development. Dynamism between floors could be envisaged from then on.

#### 2.4.2 Floors' typology

Literature presents e-commerce development's processes where levels' number and definition vary. To decrease risks of information loss, the highest tracked down levels' number in literature, which is 6, was held. Table 2 presents some e-commerce development process' levels of studied works.

Authors	Levels' titles			
Van Akkern (1999)	Entry level		Sophistication level	
IDC (2002)		Technological acquisition	Technological rationalization	Technological differentiation

Bédier (1999)	E-quoi		E-pub	E-commerce		e-business		
Earl (2001)			External communication	Inner Commu	EC	e-business	e-entreprise	transformation
Teo and Pian (2004)		Email adoption	web presence	Prospecting	Business Integration		Business transformation	
Molla and Licker (2005)	No EC	Connected EC	Static EC	EC interactiv	EC transactio	Integrated EC		

Legend: EC: e-commerce

Table 2. E-commerce development processes' levels, crossing between various works

In an understanding objective, first development floors are refined. Indeed, from e-commerce studies led on Tunisian hotel industry, a large companies' number are situated at primary e-commerce development's levels (Gherissi-Labben et al., 2002, Smaoui Hachicha, 2008). Division proposed by Molla and Licker (2005) was held because these authors detail finely first development stages.

A typology has to derive from a single classification principle (Rogers, 1995, p. 261). In e-commerce, classification variables are technological in the quasi-totality of works tracked down in literature (Earl, 2001, Prananto et al., 2001). However, some authors associate strategic behaviour with technological levels (Earl, 2001, Teo and Pian, 2004). Such an initiative risks to be problematic given that, in the same company, can coexist different maturity levels as classification bases itself on technological characteristics (Web sites characteristics) or on e-commerce associated strategies (e-commerce strategic integration). In some cases, technological developments don't come along with the company's strategic involvement. To escape this double affectation, classification variables are technological, in particular, in Web sites characteristics and associated technologies. Floors were defined on technological variables basis. To empirically arrest total or partial floor's control, it is necessary to define them in detail. Several studies developed Web sites contents analysis tools on items' lists basis (Gonzales et al., 2004, Magal et al., 2001, Wong and Law, 2005, Zhu, 2004). These studies were displayed to refine development floor's typology. For every floor, key activity is presented and detailed through its constituents. Floors getting free of it are the following ones:

- No e-commerce: This floor includes companies having neither e-mail nor Web site.
- Connection: A company belonging to this category does not possess a Web site but only an e-mail address used to establish connectivity with consumers or strategic partners. This key activity, namely e-mail, is identified by Wei et al. (2001) as the main Internet application for global hotels. Potential added value is focused on speed, efficiency and communication costs' saves (Chen, 2003, p. 272).
- Static site: when only purchase information search is done on Internet, giving no possibility to interactivity, it is about a static site. Key activity lies in informative site constitution. An added value is assured through electronic brochure constitution allowing hotel image support and Internet user information supply, in more effective, targeted way and at lower cost.
- Interactive e-commerce: This category companies' sites propose booking form, considered as key activity. At this floor, the site follows a commercial objective. Value creation is tangible by on-line marketing and interactivity possibilities (Anckar and Walden, 2001).
- Transactional e-commerce: The site allows secure on-line payment. This key activity passes by secure payment means implementation. Added value is assured through transaction instantaneity (Anckar and Walden, 2001).
- Integrated e-commerce: Integrated e-commerce implicates strong customer orientation, strong service content and commercial relation construction focus (Vescovi and Iseppon, 2002). Key activity being customer orientation, added value can result from products differentiation (Buhalis, 2000, p. 111) through service customization (J. Murphy et al., 2003); and differentiated competitive positions creation (Gloor, 2000, p.6).

Table 3 recapitulates every floor key activity.

Floors	Key activity	Sub activity to control	References
No e-commerce	No e-mail no web site	-	Molla et al. (2005)
Connection	E-mail address	<b>Answer</b> : Response (is there an answer to the e-mail?), time of response, answer to the questions put in the e-mail <b>Answer quality</b> : Polite phrases ("dear", thanks, informal expressions use), Identification (hotel, sender, customer name)	Frey et al. (2003), Gherrissi et al. (2002), Matzler et al. (2005),
Static site	informative site	<b>informational Content</b> : Company general information, products/services description, contacts information <b>Content quality</b> : Updates, Content legibility, clear language, images	Gonzales et al. (2004) Heinze et al. (2006) Magal et al.
Interactive e-commerce	Online booking (booking form)	<b>Customer services</b> : Clear booking process, Interaction possibility with the company and customer feedback (negotiation) <b>Trade information</b> : catalogue, special offers, new products, availability <b>Online visibility</b> : Search engine presence, directories, sector portals	(2001) J. Murphy et al. (2003) Murphy and Tan (2003) Wei et al. (2001) Zhu (2004)
Transactional e-commerce	Online payment	Clear booking process and online payment, security and confidentiality logistic information, transaction security, multiple payment modalities	
Interactive e-commerce	Customer orientation	Customer loyalty development systems, Offer customization, Forums, virtual communities, customer accounts, Inter-organizational collaboration	Daniel (2004) Magal et al. (2001), Zhu (2004)

Table3. Floors typology

Floors construct, as new companies' classification criterion, can be used in e-commerce development influencing factors analysis. Concept applicability is tested with regard to its use in e-commerce study on Tunisian hotel ground. Floors allow companies positioning with regard to key activities. As this work objective is not only understanding but also pragmatic, analysis extends in key activities determiners.

### 3 HOTEL INDUSTRY E-COMMERCE DEVELOPMENT INFLUENCING FACTORS

Several studies look in factors influencing e-commerce adoption and development in companies (Damaskopoulos and Evgeniou, 2003, Molla and Licker, 2005, Seyal et al., 2003). Technology-organisation-environment framework (TOE) of Tornatzky and Fleicher (1990) constitutes an example of model considering three determinants groups: environmental characteristics, organizational and technological context. Several authors emphasize the explanatory power of these interaction's perspective based adoption models (Molla and Licker, 2005, p. 879, Raymond et al., 2005). TOE framework is taken as reference given that it allows mitigating organizational and social factors negligence blamed to technological perspective, environmental determinism related to environmental perspective and company's potential to lead change overestimation by organizational perspective.

Several authors recognize optimal variables group existence explaining companies' strategic behaviour for every given industry (Kim and Lim, 1988, Leask et al., 2003). In this study, variables' choice is based on their use frequency in e-commerce works; however other variables were added to consider Tunisian hotel context.

Development floors determining variables nature is also controversial. According to Chan and Swatman (2002), e-commerce adoption and implementation driving forces seem to change during levels by which company passes. The same reasoning can be applied also to various floors. Variables differentiation according to floors, is based on two studies categories. First category made a development influencing factors affectation on various phases (Akrouf and Trigui, 2002, Chan and Swatman, 2002, Prananto et al., 2004). Second category is composed by studies treating an isolated floor (Damaskopoulos et al., 2003, Frey et al., 2003, Gherrissi-Labben et al., 2002, Matzler et al., 2005, Murphy and Tan, 2003, Van Akkern and Cavaye, 1999). Each variable influence on e-commerce development is differentiated according to floors. On this base, research propositions were elaborated. Propositions have to be tested within an empirical research.

### 3.1 Environmental variables

In hotel industry, government is identified among important actors (Coathup, 1999), difficult relation between hotels and tour operators is presented as one of the most tourism sector destabilizing phenomena (Navarro et al., 2002) and e-commerce capacity to get competitive advantage was raised by several authors (Teo and Pian, 2004, Tsai et al., 2005). According to Molla and Licker (2005, p.887), environmental factors affect more e-commerce development during advanced levels, that is from interactive e-commerce. Prananto et al. (2004), however, find that more e-commerce mature companies tend to be led by internal factors.

\* Governmental actions: Several authors mobilize public authorities' role in their e-commerce studies (Damaskopoulos and Evgeniou, 2003, Molla and Licker, 2005, Thatcher et al., 2006). For hotel sector, electronics media government strategy could include e-commerce promotion but also destination preservation which is able to guarantee e-commerce requirements. Prananto et al. (2004) have found that governmental initiatives role is perceived as slightly more influential for the last three e-commerce development phases. These authors don't specify the components of these initiatives and treat them at leaders perceptions level, their findings thus are to be taken with reserves. Indeed, a proactive government can stimulate change at the first e-commerce development floors essentially when supporting equipments investments, software and skills are concerned. As soon as e-commerce implies investment and processes reengineering difficult decisions, decision-makers become less sensitive to incentive measures (Debrecey et al., 2002, p.178). Investments and process changes become more enterprising for companies at the last 3 floors. "No e-commerce" floor membership would not be influenced by public actions.

In spite of Tunisian government actions, 27.6 % of hotels are situated in "no e-commerce" floor (Smaoui Hachicha, 2008). Within its electronics media strategy, Tunisian government decided to build a destinations management system (UNO, 2005, p.166). Research proposition ensuing from it is the following:

P1: Government actions influence hotels membership to connection and static site floors

\*Tour operators' pressure: Tour operators are trip organizers that were mass tourism promotion propellers at an international scale (Navarro et al., 2002). Customer pressure has been pointed by several authors as an ICT adoption influencing factor (Chaabouni and Zghal, 2004, Ma et al., 2003, Tsai et al., 2005). Tour operators can force their suppliers to incorporate information technologies and to develop e-commerce, constituting push factors to technological development (Buhalis and Main, 1998, Chen, 2003). Disintermediation can also play a role in this relation. By studying the case of a single Egyptian Hotel, Kamel et al. (2004) note that "the difference between selling a double room through a travel agency or directly to a guest amounted to a forgone 50% revenue of the room rate per person per night"; showing the big role of e-commerce in surmounting the travel intermediaries dependency. E-commerce allows direct sales increase, what could decrease big tour operators' domination on Tunisian hotels (Gherissi-Labben et al., 2002). This variable could influence e-commerce development from the moment where hotel sells online and profits from disintermediation. Prananto et al. (2004) have found

that partners' initiatives are more influential for the three last development levels. In the same way, Chan and Swatman (2002) identify commercial partners' relations as a problem manifesting mainly during maturity e-commerce implementation levels. Hence, proposition P2 emerges:

P2: Tour operators' pressure influences companies' membership to interactive, transactional and integrated e-commerce floors.

**\*Competition:** Competitors rivalry intensity pushes companies to develop e-commerce particularly when it is a competitive advantage source (Ma et al., 2003, Kim, Srivastava, 1998). Several studies lead to positive relation between competitive pressure and e-commerce development (Damaskopoulos and Evgeniou, 2003, Teo and Pian, 2004, Van Akkern and Cavaye, 1999). According to Teo and Pian (2004, p.466), competitive advantage in highest adoption levels is more important than in first levels. Given e-commerce opportunity to fulfil competitive advantage in advanced floors, competition could stimulate membership to these floors. Prananto et al. (2004) find that competitors' initiatives are more influential from static site level but still play a role on this side of. Competitors' imitation behaviour in primary development floors (Vescovi and Iseppon, 2002) can push companies to develop e-commerce for connection and static site floors.

Competition is mainly price concentrated for Tunisian hoteliers in search of better filling rates in lowest costs (Ayoub-Jedidi and Gits, 2004, p.1). Tunisian tourism offer has lost all its' distinctive characteristics and looks like numerous other world countries (p.4). Hence, the following proposition emerges:

P3: Competitive pressure influences companies' membership to connection, static site, interactive, transactional and integrated e-commerce floors

Environmental variables can't be considered as unique determinants of e-commerce development (Molla and Licker, 2005). In fact, some companies can be limited by contextual factors whereas others can evaluate differently their environment and decide to adopt innovative management models that could succeed even with environmental constraints.

### **3.2 Organizational variables**

Organizational variables considered in this study include star rating, affiliation, structural characteristics, resources and top management support. The studies majority treating e-commerce adoption influencing factors in hotels consider star rating and/or affiliation variables (Frey et al., 2003, Matzler et al., 2005, Yeung and Law, 2004). Structural characteristics (Chen, 2003, Thatcher et al., 2006, Zhuang and Lederer, 2006), resources (Damaskopoulos and Evgeniou, 2003, Grandon and Pearson, 2004, Molla and Licker 2005) and top management support (Chaabouni and Zghal, 2004, Seyal et al., 2003, Teo and Ranganathan, 2004) represent most frequently mobilised factors in e-commerce and ICT studies.

**\*Star rating:** luxury hotels customers are supposed to be more exacting and having superior electronic media access. Hotels dealing with these customers could profit of their connectivity in order to better reach them by developing e-commerce. Several authors conclude positive relation between hotels' star rating and their e-commerce applications development (Matzler et al., 2005, Pechlander et al., 2002, Raventos, 2006, p.383). E-commerce value creation is felt especially where operation instantaneity is assured (Anckar and Walden, 2001), but also when company has possibility to reassure the buyer, which may be geographically far from the bought product. Star rating could influence hotels membership to floors where the added value is more tangible namely for the four more developed floors. The following research proposition is expressed:

P4: Star rating influences hotels membership to static site, interactive, transactional and integrated e-commerce floors.

**\*Affiliation:** Big hotel chains have installed their informatics' booking systems for an immediate availability confirmation from 4 decades (Holloway, 1983). Gherissi-Labben et al.'s works in Tunisia (2002), those of Murphy and Tan (2003, p.546) in Singapore, of Main (1995) in Great Britain, and of

Camison (2000, p.126) in Spain, lead to positive relation between tourism companies affiliation and e-commerce elements' development. Many advantages could be driven from affiliation: promotions, management systems, administrative support, etc. Risk and cost sharing due to affiliation, could play a role in e-commerce development from the moment where material investments are sizeable that is from static site floor.

According to a study held on 728 Tunisian hotels population in 2003, 15,5% own a web site. Concerning affiliations, on 36 Tunisian hotel chains, 55,5% have a web site (Smaoui Hachicha, 2003). Hence, the flowing proposition is expressed:

P5: Affiliation influences companies' membership to static site, interactive, transactional and integrated e-commerce floors.

\*Structural characteristics: E-commerce leads at the same time to new activities and to management practices changes, that's why it concerns the whole company. Problem of e-commerce compatibility with company's management model has often been treated in e-commerce and ITC works (Chaabouni and Zghal, 2004, Chan and Swatman, 2002, Debreceny et al., 2002). The majority of studies having empirically tested variable's significance conclude on its explicative power (Grandon and Pearson, 2004, Thatcher et al., 2006, Zhuang and Lederer, 2006). According to Chan and Swatman (2002), as far as e-commerce implementation progresses, management problems start emerging and constitute notable implementation problems. Prananto et al. (2004) locate process reengineering as one of the most influent barriers for the three more advanced e-commerce levels. Proposition emerging from that is the following:

P6: Structural characteristics influence the companies' membership to interactive, transactional and integrated e-commerce floors.

\*Resources: To conclude e-commerce activity, company needs adequate resources. Company resources relate to competences (Grandon and Pearson, 2004, Molla and Licker, 2005, Zhuang and Lederer, 2006) as well as to financial resources (Hong and Zhu, 2006, Molla and Licker, 2005). "If positive perception allows surmounting financial constraints, unfavourable financial situation reduces considerably interest carried to technologies" (Monnoyer-Longé, 2002, p.21). Molla and Licker (2005, p.887) state that company's resources are more influential in initial e-commerce adoption. According to them, by developing e-commerce, resources advantages become less influential. Prananto et al. (2004) locate competences like barriers throughout the 6 development phases retained, with higher values for the 3 first phases. Hong and Zhu (2006, p.13), find that e-commerce development remains influenced by financial resources allocated even for Web services extension.

In Tunisia, "a very significant number of hotels are managed by operators not having all necessary experience and qualifications" (Ayoub-Jedidi and Gits, 2004, p.5). The income by tourist fell on this side of 400 DNT is 219 euros<sup>13</sup>, decreasing compared to last years (Sammari et al., 2007, p.2). Thus, the following proposition is put forth:

P7: The Company's resources influence the membership of all the stages

\*Top management support: Several researches identified top management support as a critical factor in e-commerce adoption and development (Lee and Kim, 2007, Teo and Ranganathan, 2004) in particular for hotel industry (Pechlander et al., 2002). ICT decision investment often escapes to the manager technical field (Monnoyer-Longé, 2002, p.14). Managers can then be guided by signals emitted by the informational space in which they bathe (Chaabouni and Zghal, 2004) or by their innovating (Chan and Swatman, 2002), proactive or strategist character (Monnoyer-Longé, 2002). According to Prananto et al. (2004), e-commerce adoption initiatives in first development stages is a non reflected answer rather than a need realization to have innovating e-commerce solutions. According to Prananto et al. (2004), more electronic commerce mature companies are directed by internal factors like top management

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<sup>13</sup> Exchange rate euro / Tunisian dinar = 1,8266, [www.bct.gov.tn](http://www.bct.gov.tn), Consulted 7th of May 2008

engagement. Of their share, Chan and Swatman (2002) have found that top management engagement and support problems appear in median e-commerce implementation phases and as far as implementation tends towards maturity, management problems become influential in an increasing way. Molla and Licker (2005, p.887) also advance that top management engagement affects institutionalization rather than initial electronic commerce adoption.

The majority of Tunisian hotel establishments are independent entities where property and management are between same hands (Ayoub-Jedidi and Gits, 2004, p.3). The research proposition which emerges is as follows:

P8: top management support influences companies' membership to interactive, transactional and integrated e-commerce floors.

### **3.3 Technological variables**

Among technological perspective's variables, technology cost and e-commerce expectations were retained. E-commerce expectations and variables referring to it, such as perceived utility and perceived relative advantage, are the most frequently mobilized technological variables in literature (Chen, 2003, Grandon and Pearson, 2004, Teo and Ranganathan, 2004). Although technology cost is not frequently used in e-commerce studies (Hong and Zhu, 2006, Whelan et al., 2001), it was included in the analysis given the critical situation of numerous Tunisian hotel companies. Technological variables impact seems more intense when company doesn't recognize, economic or strategic, e-commerce benefit (Chen, 2003, p.273). Chan and Swatman (2002) underline technological variables intensity at first development levels.

\*Technology cost: Several reports and studies leaned technology cost as influencing e-commerce development (Ernst & Young, 2001, Hong and Zhu, 2006, OECD, 2004). Initial e-commerce investment does not lead to consequent incomes for first stages (Chen, 2003, p.273). Moreover, Prananto et al. (2004) find that e-commerce cost is more influential during first 3 development levels.

Cyberresa, a specialized company in online sale solutions for secure payment in Tunisia, proposes packages for independent hotels with 2.737 euros and options going up to 13.960 euros. For hotel chains with 5 hotels and more, packages of 8.211euros are proposed as well as options reaching 19.435 euros.

P9: Technology cost influences companies' membership to connection and static site floors.

\*Expectations: Expectations relate to e-commerce advantages. Westbrook et al. (1983, p.257) define consumers' expectations as a priori conviction related to product or service performances probability. Bhattacharjee et al. (2004) recognize analogy between consumers purchase decision and IS users' decisions of use. These authors affirm that expectations notion can be theoretically broader than perceived utility and contain additional convictions such as ease of use. Perceived utility is considered in the TAM as one of the most important factors in systems use explanation. Expectations can influence decisions relating to e-commerce development (Grandon and Pearson, 2004, Kowtha et al., 2001, J. Murphy et al., 2003). According to Vescovi and Iseppon (2002), companies being at first e-commerce development levels still don't have specific objectives whereas those in more advanced development levels formulate image and information objectives or relational ones. E-commerce incomes are perceived as being unpredictable especially during first adoption levels (Debreceeny et al., 2002, p.178). Where from the following proposition:

P10: Strategic expectations influence membership to all the floors

Various environmental, organisational and technological variables relations with e-commerce development were exposed on the basis of principal theoretical works on matter. Analysis of these factors shows a possible influence distinction between companies with various development floors.

Diagram 1 recapitulates floors and their interaction with variables; clarifying each influential factor impact on development.

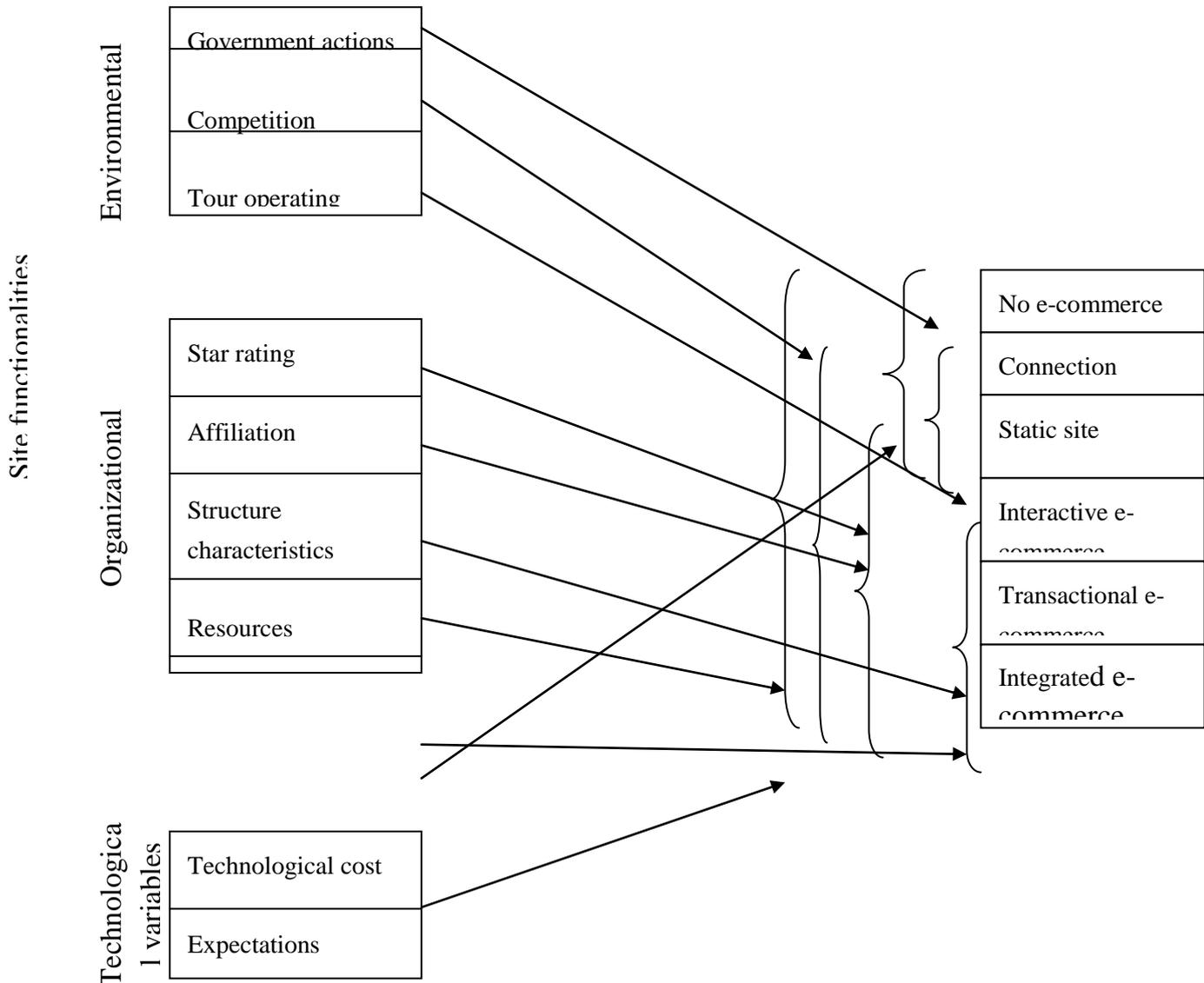


Figure 10. E-commerce development model according to floors.

#### 4 CONCLUSION

E-commerce development was approached in various ways in literature. Some works consider it through implementation process; others through adoption/non adoption and others describe it by development process. These various models don't seem to reflect way in which practitioners develop e-commerce in companies, the pragmatic range of these models is some limited. Floors logic, whose introduction constitutes the major theoretical contribution of this paper, makes it possible to report e-commerce development reality. Floors are associated to trajectories which can or not be linear. The construct makes it possible to recognize a partial previous floors components control. Floors concept mobilization, as a new companies' classification criterion in e-commerce development influencing factors analysis, constitutes a possible use of the construct. E-commerce development factors have been subject of multiple discussions, however, no indications have been made on these factors distinction throw

different maturity levels. The model suggested presents influential factors distinction according to development floors.

Managerial contributions refer mainly to two elements. Initially, the developed model can be used for diagnosis in order to position hotels according to their e-commerce development and to plain future possibilities that a hotel can adopt. Then, by identifying factors acting for each floor, targeted practical actions can be proposed, according to floors to promote e-commerce development. Thus, this new construct authorizes e-commerce development diagnosis in order to help locating actions to be led as well to company as to macroeconomic level. Having positioned the company, it could be possible to identify the future direction to take and the factors to handle in order to be able to reach the pointed position. This analysis could supply a base for planning future e-commerce actions.

This e-commerce development diagnosis and explanation tool was contextualised to Tunisian hotel industry, the objective, in this study, not being to develop general model (Thiéart, 2003, p.18, Wacheux, 1996, p.43). Tunisian hotel context consideration was based on the analysis of national and international organizations' publications like those of the Tunisian Tourism National Office (ONTT), of World Bank, UNO. Other publications or researches relating to Tunisian hotel industry in particular were also used (Ayoub-Jedidi and Gits, 2004, Gherissi-Labben et al., 2002, Sammari et al., 2007, Smaoui Hachicha, 2008). Tunisian context Works analysis made it possible to concentrate on variables' relevance for hotel industry. The various data coming from these publications were also mobilized in variables influence discussion in connection with floors.

These analytical investigations would deserve to be subjected to reality verification. A qualitative study is planned to test floors model. In order to cover various e-commerce development floors, the projected ground research proposes to consider companies cases for each floor. For each case, e-commerce development trajectory will be studied and factors acting in its development will be identified.

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