

APPLICATION HOSTING AS MEANS FOR ALIGNING BUSINESS AND IT: THE CASE OF AFRICA-ISRAEL HOTELS

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Abstract

With business performance, global trade, and worldwide communications now dependent on effective use of Information Technology (IT), organizations aspire to achieve return on IT investment and to capture IT value. Research shows that alignment between business and IT strategies is a prerequisite to capturing IT value. This case study is about Africa-Israel Hotels (AIH), a centralized hotel chain that has aligned its business and IT strategies by means of application hosting. Although some past research looked into Application Service Providers (ASPs), no previous study has suggested it as an affordable means for SMEs to achieve business and IT alignment. The MIT90 framework of Scott Morton (1991), and the four-stage IT-architecture evolution model of Ross (2003) are used to discuss the dimensions of business and IT alignment and to demonstrate how such alignment can enable capturing IT value. The case also presents a somewhat innovative way of application hosting – a hybrid ASP-outsourcing solution, used by AIH to mitigate risks.

Keywords: Business strategy, IT strategy, IT architecture, MIT90 model, IT value, business-IT alignment, application hosting, Application Service Provider (ASP)

1 INTRODUCTION

Being dependent on effective use of Information Technology (IT), organizations aspire to capture IT value. According to Scott Morton's (1991) MIT90 framework, IT value is best captured when aligned with business strategy, management processes, organizational structure, and individuals and roles in the organization (Figure 1).

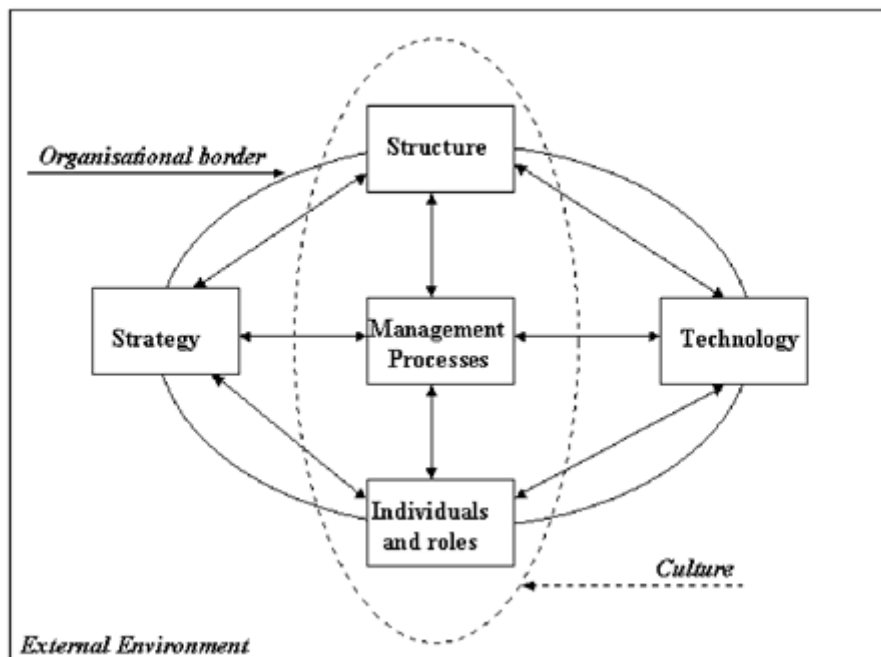


Figure 1: The MIT90 framework

Senior management needs to decide on *business strategy*, "defined in terms of choices pertaining to the positioning of the business in the competitive product-market arena" (Venkatraman, 1991, p. 154). It then needs to create organizational structures, management processes, acquire the appropriate IT, as well as recruit the required skills all harnessed to achieve the strategic goals. Yet, in order for the firm to maximize the business value of IT, firms need to align Business and IT strategies and infrastructures (Henderson and Venkatraman, 1993).

In reality, however, many firms find it quite difficult to align IT strategy, as well as the associated IT infrastructure, processes, and roles with business strategy, and such alignment process cannot be achieved instantaneously. Ross (2003) models the road to such alignment in terms of four evolutionary stages, from application silos architecture, through a standardized technology phase, to a rationalized database and only then to the most effective and efficient modular architecture, where IT can be fully utilized to support dynamic and agile business processes (Ross, 2003).

While true for the larger firms, Small and Medium-sized Enterprises (SMEs) find business-IT alignment even more difficult to reach, requiring a clear business strategy first, and then expensive resources, such as consultants, IT investments and IT personnel, to facilitate installation of the most adequate infrastructure. Yet, SMEs are mostly characterized by having an informal business strategy, if at all (Levy et al, 2002), often ending up with structure, processes as well as individuals and roles that are far from optimal. A typical scenario at SMEs is an IT structure of fragmented information silos, slow cross-functional processes, and obscured view of business data (Goodhue et al., 1992;

Heart et al., 2001). While larger enterprises turned to centralization, smaller organizations, for the most part, found centralization too costly and complex (Ekanayaka et al., 2002; Sigala, 2003).

With the growing ubiquity and reliability of the Internet application hosting has become possible by means of Application Service Providers (ASPs). ASPs, which are "third party service firms which deploy, manage and remotely host software applications through centrally-located services in a rental or lease agreement" (Currie and Seltsikas, 2001, p. 123), have presented a new IT sourcing option (Heart and Pliskin, 2001; 2002a;b;c; Kern, et al., 2002; Sigala, 2004). Analysts enthusiastically embraced the ASP option as enabling the transformation of computing from a product to a service, using terms as "service-oriented", "on-demand" "utility" or "pay-as-you-go" computing as well as "software-as-a-service" and "software-on-tap" (Newcomb, 2004; Carr, 2005).

Serva et al. (2003) considered the ASP option especially appealing for smaller organizations, while other researchers, such as Currie et al. (2004), offered various perspectives on drivers and inhibitors of ASP adoption, no previous study looked at ASP hosting as an enabler of better alignment between business and IT strategies and infrastructures. Thus, the objective of this paper is to demonstrate via a case study how an organization achieved Business-IT alignment by opting for the ASP model (third section). The MIT90 framework of Scott Morton (1991) and the four-staged IT architecture transformation process of Ross (2003) are used in the concluding section as a lens for the case findings discussion.

2 METHODOLOGY

Case study research is particularly appropriate in early formative stages of theory development (Benbasat et al., 1987) and, according to Yin (1994), is helpful in a relatively new research domain by laying a foundation for more comprehensive research in the future.

Phase	Research question	Participants	Input data	Output
1 Exploratory	None	First author	List of events, interviews, documents and observations	ASP adoption decision process
2 Explanatory	What are the driving and inhibiting factors affecting the decision to adopt ASP in AIH?	First and second authors	Transcribed interviews, list of events, documents, observations	ASP adoption principal driving and inhibiting factors (beyond the scope of this paper)
3 Explanatory	What other implications can be derived from the case details?	An outside expert (third author)	Case details and implications derived at the second phase	ASP as a means to achieve alignment between IT and business
4 Wrap-up		all authors	Case details and combined implications	Final case study

Table 1: Data analysis phases

Site Selection: We have chosen the AIH hotel chain as the target site for this case-study research for the following reasons. First, AIH represents a medium-sized organization that operated fragmented and decentralized information systems that was unaligned with its business strategy, processes and infrastructure, but was going through a gradual process of IT and business alignment. Second, unlike many smaller organizations, the decision process at AIH to opt for application hosting was more structured and documented, and was mostly carried out by two executives, the Chief Financial Office (CFO) and Chief Information Officer (CIO), within a relatively short period of time (December 1999 to June 2000). This helped answering "why" and "how" questions underlying the case study methodology (Yin, 1994). In addition, there was also an element of convenience in the site selection

due to the first author's prior acquaintance with AIH's Chief Executive Officer (CEO) and CFO, which resulted in the full cooperation and the high level of confidence necessary for bringing out rich case information.

Data collection and analysis: We acquired data for this study from semi-structured interviews with the CFO, CIO, CEO, a hotel manager and a Marketing manager, company documents, and direct observations (Yin, 1994) and analyzed the data in four stages, summarized in Table 1.

3 THE CASE OF AFRICA-ISRAEL HOTELS

Africa-Israel Hotels (AIH), active in Israel in 1991, represents the Holiday-Inn brands in Israel. Its first Crown-Plaza hotel was opened in Tel-Aviv in 1993, followed by opening of new hotels of the Holiday-Inn and Crown-plaza brands nearly every year since, in various cities and locations in Israel. By 2000, AIH employed more than a thousand employees in nine hotels and headquarters.

From its inception, AIH senior management made strategy clear: rapid penetration into the Israeli hospitality market through utilization of the global Holiday-Inn brand, by offering top-quality guest experience, while keeping costs low. To support this business strategy, AIH's management opted for a centralized organizational structure. Consequently, AIH headquarters provide central services to member hotels, such as finance, marketing, and sales with all major decisions regarding operations, finance, marketing and HR made by top management at the headquarters, demonstrating centralised business structure, management processes, and individuals and roles (see Figure 1). Yet, in contrast to the centralized management strategy, structure, processes and roles at AIH, IT has been initially decentralised, and it took about six years and four stages to align the business and IT strategy. These stages are described next.

3.1.1 First stage - decentralization

In 1994, when the first hotel opened, the only affordable hotel-management software packages were stand-alone, PC based, off-the-shelf applications. AIH acquired one such application and installed it in each new hotel to handle such front-office functionality, as reservations, receptions, cashiering and housekeeping, with a second, separate, stand-alone PC-based application installed to handle such back-office functionality, as accounting and logistics. The two main mission-critical systems interfaced via a third system that also connected other satellite applications. In this fully decentralized stage, management at each individual hotel were responsible for local hardware support arrangements, local IT personnel to handle day-to-day IT operations, and had a relatively high degree of freedom in decision-making regarding IT investments and enhancements. Yet, local managers largely viewed IT as a necessary evil, thus were reluctant to invest the resources required for flawless IT operation. In the words of one top manager: "*IT has never really worked for us and we could not justify the investment in IT*".

Consequently, senior AIH management at headquarters was greatly disappointed, especially since that situation made consolidated enterprise-wide data difficult to obtain. Moreover, aspirations to establish a central reservations office, a function known to be associated with great economies to scale, could not be realized in the absence of a centralized database that was neither supported by the decentralized IT architecture nor affordable at the time.

3.1.2 Second stage – centralizing processes and roles

Striving to improve this gloomy situation, AIH hired a CIO in 1994. The CIO took over the allocation of IT budgets and decided to centralize the IT organizational structure by centrally signing contracts with IT service vendors, for hardware and software support at all sites, thereby reducing overall maintenance costs and ensuring consistent service. One skilled technician located at headquarters replaced all local IT personnel, serving as a single point of contact and dealing with the IT service

vendors. The CIO also had a wide area network (WAN) installed, in 1995, to connect all member hotels and headquarters. Despite all this, only limited control was possible due to the legacy applications at the client side, the Novell LAN-oriented operating system, and the non-standard file systems. Moreover, it was not helpful centralizing the reservations offices since AIH could not afford the consolidation of the disparate hotel data. With the addition of new hotels, the semi-centralized IT structure with limited centralized IT roles and individuals proved unsatisfactory, leading AIH senior management towards the end of 1996 to outsource all IT operations to IBM, with the CIO serving as liaison between IBM and AIH.

3.1.3 *Third stage – operational IT outsourcing*

This new arrangement, although improving daily IT operations at the hotels, proved more costly than the previous one, with local management complaining of only marginal benefits in exchange to the increased expenses. In addition, the new CFO hired in late 1998, who was pleased neither with the conduct of the CIO nor with the performance of IBM, contracted the small IT-services company XOR to serve as IT consultants for AIH. Not long afterwards, in early 1999, XOR replaced IBM as the outsourcing contract vendor for AIH. At the same time, AIH also outsourced the CIO position to XOR. This arrangement introduced AIH to highly competent IT personnel, increasing end-user and management satisfaction for a while, as the CFO stated: *“I saw that our CIO could not deliver even relatively simple tasks such as establishing an organizational e-mail system. All I got were stories about which supplier did not do what. So, I got fed up with the incompetence, and decided to go for a full outsourcing with XOR, including the CIO position. The change was amazing. We got e-mail up and running in weeks, along with other IT long-delayed projects.”*

Yet, in spite of the improvement in IT day-to-day maintenance and services, system performance became unsatisfactory with unacceptable systems downtime, leading to a decision with AIH to replace the unreliable hotel-management applications. The CFO, in charge of the replacement decision, agreed to consider Silverbyte's newly introduced OPTIMA windows-based application, also offered in a pure ASP mode, namely – application and data remotely stored at the vendor's server farm: *“We visited a hotel in Eilat that was a Silverbyte's customer in an ASP mode, where the CEO had confirmed that they were satisfied with both OPTIMA and Silverbyte's ASP arrangement. So, I figured out that if he is happy, we too can go ahead with Silverbyte”*.

Following the OPTIMA pilot at the newly opened Holiday Inn Express in Eilat, Silverbyte offered to host the OPTIMA application and database at their servers, similar to its arrangement with a number of other Israeli hotels. Yet the CFO decided otherwise, opting to install the servers at AIH headquarters and refusing to entrust AIH organizational data with Silverbyte: *“I could never even think of having our most valuable data stored elsewhere, other than within our own premises”*.

3.1.4 *Fourth stage – centralized IT structure via ASP*

AIH thus opted to host the OPTIMA application at its headquarters for all its hotels in a fully centralized architecture. Within about sixteen months, AIH installed inexpensive thin clients at each member hotel, using the Citrix technology for data transfer between the server at AIH headquarters and the remote clients. A server-farm at headquarters provided the OPTIMA application and database services to the member hotels via leased frame-relay communication lines, operated by XOR as the outsourcing vendor. Systems availability and uptime have improved while IT costs were reduced, not only because the new technology has been more reliable but also because XOR could allocate skilled resources to maintain the central server farm, without having to travel all over the country.

3.1.5 *Post centralization IT utilization*

Top management at AIH views the move to the fully centralized stage as a great success allowing AIH to install value-adding enterprise-wide applications that support its business strategy. In 2002, a

central reservation system went live, replacing all local reservation offices. In the first peak season after the central reservation office became operational, reservations done independently by customers, rather than via travel agents, increased by 70%, resulting in a total of \$400,000 savings for AIH in travel agent commissions thus fully returning the investment in the reservations system. During the following year numerous other value-adding applications have been added including an application which enables central handling of travel-agent vouchers, saving AIH substantial sums previously lost due to lost travel-agent vouchers at the hotels. In general, AIH's senior management is now satisfied with IT utilization, cost-effectiveness, and IT support of business strategy.

4 DISCUSSION AND CONCLUSIONS

Table 2 summarizes the four stages AIH undertook towards aligning its IT strategy with business strategy as well as the post-ASP stage, illustrating the newly achieved IT value. Table 2 shows for each stage the dimensions of alignment according to the MIT90 model (in the third column) and the relevant stage in Ross's model (in the fourth column).

Stage	IT at AIH	MIT90 dimensions affected	Ross stage
I - Full IT decentralization	Locally installed and maintained applications. Planning and budgeting is local	IT structure, processes and individual and roles are unaligned with business strategy	Application silo architecture
II - Semi IT centralization	CIO nomination, centralization of IT personnel, planning and budgeting, WAN installed	Some alignment of processes and roles, yet IT structure is still largely unaligned	Standardized technology architecture (partial)
III - Semi IT centralization through outsourcing	IT operations outsourced to IBM, later replaced by XOR	Further alignment of IT processes and roles	Standardized Technology, processes and rules reinforced
IV - Full centralization through ASP	All nine hotels are accessing applications and databases centrally	IT structure is aligned with business strategy, processes and roles	Rationalized data architecture
Post centralization	Establishment of value-adding applications	IT supports business strategy	Modular architecture

Table 2: Four stages of transition from fully decentralized to fully centralized IT structure

According to the MIT90 model (see Figure 1), in order for an organization to fully capture IT value, IT should be aligned with business strategy, structure, management processes, as well as individuals and roles. The AIH case manifests the gradual evolution of this alignment, affordable only through adoption of ASP. While having a clear business strategy of being a leader in market share and a low-cost producer that utilizes as many economies of scale as possible, and despite centralization tactics in most functions, AIH could not afford to centralize IT before Year 2000. Ross (2003) describes the initial IT decentralization stage as the stage of Application Silo Architecture. IT decentralization was not only costly to AIH at this stage but also made cross-organizational data difficult to attain, which is detrimental to decision-making efficiency and effectiveness.

Larger, globally distributed firms may find merits in IT decentralization, such as developing customized applications to better suit local requirements. SMEs, on the other hand, cannot afford localization and customization associated with IT decentralization. SMEs thus face the risks and disadvantages of this fragmented structure without enjoying any benefits. This explains the relatively early move by AIH to the second, semi-centralized stage. At this stage, consistent with Ross second stage of Standardized Data Architecture, AIH opted to appoint centralized IT roles in order to

standardize as many IT elements as possible. These standards, however, applied to local installations, since further IT centralization other than the installed WAN was not yet affordable.

By moving to operational IT outsourcing in the third stage, AIH reinforced the roles it started to form in the second, semi-decentralization stage. Outsourcing was the preferred tactics since at that time AIH considered IT critical to smooth operation, but not strategic or core activity (as is typical to many SMEs). Alignment of IT individuals and roles began at AIH with the recruitment of a CIO and an IT technician at headquarters and dismissal of local IT personnel, in the second stage, and the outsourcing of IT operations to IBM and later to XOR, in the third stage. AIH managed to better align IT processes with business processes by transferring IT planning, budgeting, and training to headquarters, in the second stage, and by outsourcing in the third stage. Efforts undertaken by management to align IT with business strategy, structure, roles, and processes yielded only limited IT value, as long as the IT infrastructure remained decentralized. Moreover, AIH could not afford at that time make the transition into the third Ross stage of Rationalized Data.

AIH reached a fully centralized IT infrastructure only in the fourth stage, by opting for application hosting. IT operations at the hotels became lean and nearly maintenance-free, since the thin clients required minimal service. Database consolidation not only improved service levels at the hotels and headquarters, but also eased retrieval of cross-organizational reports. At this fourth stage of centralized IT structure, AIH fully aligned the strategy, structure, processes and roles in the IT arena with business strategy, as suggested by the MIT90 model, paving the way to installation of value-adding applications. For example, the new architecture enabled installation of a central reservations office at AIH that resulted in a rapid return on IT investment. Only through ASP adoption did AIH made the transition to the third Ross stage - Rationalized Data Architecture, leading to the fourth, Modular Architecture stage. In this stage, IT strategy, structure, processes and individuals and roles were fully aligned to the business side, as suggested by Scott Morton (1991). The improved support of IT to business processes, achieved only in this stage, was only affordable through ASP.

Whereas larger organizations can thrive for Business-IT alignment and gradually accomplish it through stages such as those suggested by Ross (2003), SMEs often find this process unaffordable, leading to dissatisfaction and disappointment of IT utilization as well as to reluctance to further invest in IT (Heart et al., 2001; Sigala, 2003). Application hosting presented an affordable solution for AIH. Shared, enterprise-wide capabilities were enhanced, allowing for the Standardized Technology and Rationalized Data stages to be reached, leading next to what Ross suggests as the most cost-effective and valuable Modular Architecture phase.

Past literature paid much attention to the economic aspects of application hosting but hardly any attention to the possible contribution of application hosting to business-IT alignment, especially in the SME context. Although, as with any case study, further research is required prior to generalization, we propose two implications from this case for cautious consideration by practitioners. First, vendor and customer organizations might consider the alignment of IT and business strategies and the resulting increase in IT value as benefits of application hosting, as demonstrated in this case. Second, distributed SMEs might consider a hybrid ASP arrangement, with headquarters acting as a service provider vis-a-vis distributed entities while a third party (other than the software provider) is contracted to run the server farm in a traditional IT outsourcing contract, thus removing a major inhibitor cited in the literature which is the unwillingness to entrust valuable IT assets with a vendor, (Heart and Pliskin, 2002a;b). As opposed to pure ASP contracts, where application and data are both hosted by the software vendor, this arrangement reduces the risk of full dependence of the customer organization on one vendor for both application and infrastructure provisioning.

A number of lessons can be drawn from this case: first, as stated above, ASP consideration can be enhanced beyond just IT efficiency and effectiveness, as suggested by the literature. Second, ASP vendors need to come up with flexible provision models, such as the hybrid mode adopted by AIH. The 'one size fits all' belief shared by some of the first-wave application providers failed to achieve the required customer base, perhaps leading, among other causes, to the slow penetration of ASP in

the late 1990s. Indeed, we now are perhaps evident to a second-wave ASPs, among which salesforce.com is a leader, that offer flexible business models to fit various requirements. SMEs can perhaps look at ASP adoption not only as a mere change in IT processes and individuals and roles, but also as a vehicle to achieve IT-business alignment, required for maximizing IT value. Yet, it still remains to be seen whether ASP as an advanced demonstration of IT outsourcing becomes a prevalent business model, as predicted by Carr (2005). Further research is suggested to look into longitudinal satisfaction with various ASP arrangements, as well as into institutional and environmental conditions required for ASP to be more often perceived as a viable option by potential customers.

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