Impact of ERP usage on service differentiation: role of mediating effect of organizational agility

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Received 19 June 2022
Revised 4 September 2022
30 September 2022
8 November 2022
Accepted 9 November 2022

Abstract

Purpose – Several different factors have an influence on the hotel sector in Jordan. Due to the different circumstances and the turbulence in this region, hotels face a competitive and dynamic economic environment, which causes these hotels to seek differentiation. Consequently, hotels need different strategies and support from information technology to achieve a competitive advantage. The purpose of this study is to investigate the extent to which enterprise resource planning ERP system usage affects service differentiation in the hotel sector in Jordan and examine the mediating effect of organizational agility on the aforementioned relationship.

Design/methodology/approach – Questionnaires were used to collect data from the hotel sector in Jordan. The response percentage was 75.41%.

Findings – The result showed that there is a significant effect of ERP system usage on service differentiation in Jordanian hotels, and this relationship was mediated by organizational agility. Organizational agility and its dimensions have a partial mediating role on the relationship between ERP system usage and service differentiation except for responsiveness which has a full mediating role. So, being an agile hotel will increase the ability to achieve service differentiation by using ERP systems.

Practical implications – This research focuses on investigating the mediating role of organizational agility in the relationship between ERP system usage and service differentiation within hotel sector in Jordan. Moreover, this research investigated the applicability of organizational agility on the hotel sector as it is mainly implemented in the manufacturing sector. The results show that organizational agility and its dimensions have a partial mediating role on the relationship between ERP system usage and service differentiation except responsiveness which has a full mediating role. So, being an agile hotel will increase the ability to achieve service differentiation by using ERP systems. Therefore, hotel practitioners in Jordan should focus on applying the required technologies and achieving organizational agility in order to achieve service differentiation. In addition, this study highlights that ERP usage has a positive impact on achieving organizational agility and service differentiation; hence, using these systems will help hotels in Jordan to implement agility capabilities which, in turn, help to achieve service differentiation. However, there are real challenges in hotel sector as implementation of ERP is expensive and time-consuming. The outcomes of this research can have additional reference that could benefit researchers in the future and bring attention of hotel managers in Jordan to the importance and advantages of this research.

Originality/value – A new model has been developed. An empirical investigation was performed on the hotel sector in Jordan to test the new model.

Keywords Competencies, Flexibility, ERP systems usage, Hotels, Organizational agility, Service differentiation, Responsiveness, Sensing capability

Paper type Research paper

1. Introduction

In the last decade, markets have become highly competitive and turbulent, and the changes have become a regular feature due to the unstable political situation (Omari, Ali, Mahmoud, & Jawabreh, 2015). However, Jordan is trying to remain politically neutral despite the

This work was supported by University of Petra – Dean of Scientific Research [2020/2/2].

Arab Gulf Journal of Scientific Research
Vol. 41 No. 3, 2023
pp. 359-375
Emerald Publishing Limited
e-ISSN: 2536-0051
p-ISSN: 1985-9899
DOI 10.1108/AGJSR-06-2022-0085

vulnerability and instability of its neighborhoods. The neighborhood situation reflects instability in the Jordanian market, particularly in the tourism sector, which is considered the economic development driver and the second fastest growing sector in Jordan (Shdeifat, Mohsen, Mustafa, al-Ali, & Al-Mhaisen, 2020).

Due to the turbulence and instability of this environment, and the increasing number of hotels in Jordan in the last five years, hotels have had to diversify their offers and packages to be special and distinctive. This is being carried out by providing more unique activities and improving the quality of their services, products and facilities. This allows hotels to meet international criteria, increase the number of guests and encourage them to extend their stay in their hotels (Shdeifat *et al.*, 2020).

Consequently, many hotels are getting ahead by applying successful strategies, thus making it harder for any competitive advantage to be sustained. This leads to hyper competition, defined as an increase in the level of competitive intensity in most industries (Wheelen, Hunger, Hoffman, & Bamford, 2015). Therefore, hotels have to differentiate their services continuously to achieve a competitive advantage.

One trend that has gained a lot of attention in recent decades is the use of information technology applications in implementing processes. It helps the hotel sector to face this dynamic environment and the challenges that come with it. It can also help to tackle many threats as well. These applications can take advantage of all the changes and help in improving and introducing quality services for the guests of these hotels (Law & Jogaratnam, 2005).

One of the IT applications that can help in facing these challenges is enterprise resource planning (ERP) systems. These systems integrate information and data from all departments of an organization. The purpose of using these systems is to make different departments of a certain organization work together as one unit to implement business processes (Laudon & Laudon, 2021). Most hotels in Jordan are using this software to help them in implementing their processes easily and efficiently.

Another important way that many businesses have to adapt in order to cope with the unexpected changes in an unstable business environment is to become an agile organization. Nzewi and Moneme (2016) define agility as adapting and coping with unexpected changes and dealing with all threats that they may face.

Being an agile business requires special capabilities. Responding quickly to unexpected changes is the most important one. In addition to sensing and recognizing these changes, organizations have to strive to take advantage of and create opportunities from these changes. Other capabilities are competencies and flexibility. Competencies are the set of abilities that any organization possesses in order to achieve its goals. These abilities are the activities which provide efficiency and productivity in an organization. Flexibility is defined as the way of producing different products and achieving different objectives (Nzewi & Moneme, 2016).

Different studies such as Khoshlahn and Ardabili (2016), Kharabe, Lyytinen, and Grover (2013), Yeganegi and Azar (2012), Mason (2010), Sambamurthy, Wei, Lim, and Lee (2007) and Zhang and Sharifi (1999) have investigated agility as a strongly manufacturing-biased concept, but there has been no such study of the concept in relation to the hotel sector.

In recent years the hotel sector has faced many challenges. The global technological progress, the increase in the number of hotels in Jordan, the economic factors and the recent turbulence in the region have all established a competitive and dynamic economic environment for hotels, which is leading to many hotels searching for differentiation. Based on these circumstances, hotels need to rapidly reconfigure, modify and change the way they work in order to respond to both internal and external changes in the business environment (Omari *et al.*, 2015).

The problem of how hotels can achieve service differentiation despite uncertainty, unpredictability and changes in the environment is an important topic for both academics

and professionals. Technology could contribute to achieving service differentiation. ERP systems can be considered as key pillars that support hotels to achieve their business goals.

In this research, a deeper understanding of ERP system usage and its relationship with service differentiation will be provided. Additionally, it will further investigate whether organizational agility has a mediating effect on the aforementioned relationship. Also, this research will examine the viability of organizational agility on the hotel sector.

2. ERP systems

In large organizations, information is spread across many computer systems and in different departments and units. This information may support different and specific processes or activities, and therefore could be important for other departments outside of those that own the data. Consequently, ERP systems have been developed to expedite the flow of information among different departments and for different functions. ERP systems also facilitate the integration of information, thus improving communication which, in turn, leads to a quicker fulfillment of operations and an increase in productivity. These systems facilitate sharing information across organizational units, which, in turn, helps with decision-making, due to the fact that they offer a wide, reliable and consistent view about the processes and activities in the organization in a short time (Laudon & Laudon, 2021). Moreover, ERP provides employees and firms with ability to acquire, manage, share and organize huge amount of data; it also links all organization's activities, information and processes, and it can help achieve sustainability (Molina-Castillo, Rodríguez, López-Nicolas, & Bouwman, 2022).

Several studies have examined the importance of ERP systems in different sectors. In the field of industry, Njihia and Mwirigi (2014) discussed how the implementation of ERP system affects the performance of an organization by reducing costs, increasing productivity and improving operations.

Ruivo, Johansson, Sarker, and Oliveira (2020) assessed the effect of ERP capabilities, namely analytics, collaboration, web portals and add-ons and ERP use on ERP value. The results show that the role of ERP use is more important when moderating ERP capabilities and ERP value, than when mediating between ERP capabilities and ERP value.

While Deshmukh, Thampi, and Kalamkarc (2015) discussed how the ERP systems improve productivity and overall business performance, they also emphasized that in order to face global challenges these systems are the solution for small and medium enterprises in India.

In a study by Metaxiotis and Liagkouras (2017), the researchers showed that in the banking sector, ERP systems provide faster and dynamic information sharing in different departments and units in banks, which leads to not only attaining preferable coordination, but also achieving effective adaptability to threats or opportunities in a business environment. Moreover, this sector should have ERP systems that are customized to its needs, which should be integrated with a bank's systems.

Aburub (2015) asserted, however, that there are significant variables other than ERP systems which may contribute to organizational agility in the banking sector, despite the significance of the usage of these systems in this sector.

As the information about the hotel guests becomes more important for improving services, the capability of ERP systems offers faster and improved processing of information. Consequently, these systems can help functional flexibility and the availability of the information and data required, which leads to service flexibility. This would lead to an improvement in the coordination, the functional flexibility and the sharing of information and data, empowering hotels and helping them to achieve their goals (Beldona, Beck, & Qu, 2014).

3. Service differentiation

Competitive advantage, as Michael Porter stated, is the value created by firms for the customers which exceeds the cost of creating it. Value is defined as what the customer is willing to pay, and superior value comes from the firm providing a service at a lower price than the competitors for the same benefits or unique benefits (Tanwar, 2013).

While markets are becoming highly competitive and turbulent, and while markets change with the unstable political situation, Jordan is striving to adopt a politically neutral position. However, its neighborhoods remain vulnerable and unstable, which reflects the instability in the Jordan market.

Jordan has been ranked on the competitiveness index of 2016 as 64th of 144 countries, indicating improvement over recent years, although the income level in Jordan is closer to its less competitive neighbors such as Egypt and Morocco (MOP, 2016).

Michael Porter explained that competitive advantage can be divided into two basic types: cost leadership and differentiation (Bacanu, 2010). Moreover, service differentiation has been defined as crucial strategy in engineering growth of organizations (Vakulenko, Arsenovic, Hellström, & Shams, 2022).

4. Organizational agility

Any organization that wants to survive and thrive in the newest global business environment needs to be agile. An organization should be different in its response to internal changes and business environment changes. So, the direct mission for an agile company is to respond to changes and cope in turbulent circumstances in a business environment (Nzewi & Moneme, 2016). Therefore, it is the response to the new demands of the business world, and the organizations strategies have to be developed to help them face these demands (Zhang & Sharifi, 1999).

Izza, ImacheL, Vincent, and Lounis (2008) argued that agility is the continual ability to improve efficiency and effectiveness of the execution of business processes, or the ability to expect the dynamic of a changing market, adapt to these dynamics and to beat the rate of change, by moving and improving themselves faster in the market.

Iacocca Institute of Lehigh University (USA) is the creator of the concept of agility, as Nafei (2016a) clarified. It was defined as systems of manufacturing with various capabilities in order to meet changes in the marketplace. He added that agility is how to successfully apply competitive bases.

Nafei (2016b) argued that agility has different attributes such as flexibility, which is the primary attribute, the effective response or the proactive response to change and uncertainty. He also emphasized that it is the ability to survive, improve and develop in an unpredictable environment. On the other hand, Zhang and Sharifi (1999) referred to agility as the ability to seize opportunities in a turbulent environment. Seizing opportunities requires the organization to possess a sensing capability, which constitutes the ability to spot, interpret and pursue opportunities in a business environment (Nieves, Quintana, & Osorio, 2016). In addition to the competencies, a wide range of different effective abilities that help in providing and producing qualifying activities are also necessary.

4.1 Flexibility

Zhang and Sharifi (1999) argued that an agile organization should have the ability to process different products and achieve different goals with the same facilities. Moreover, flexibility should be demonstrated in terms of people, product, organization and organizational issues. They added that flexibility is considered as the most important factor that should be presented in any agile organization in order to deal with changes successfully.

Mason (2010) argued that being an agile organization means that it must be flexible and maintain its flexibility to support the different requirements of stakeholders. Being an agile organization, which encourages continuous learning and allows employees to accept responsibilities, could be important for achieving the goals of the organization.

4.2 Responsiveness

Mason (2010) argued that the major issue in determining the success of any business is responsiveness. Zhang and Sharifi (1999) argued that an organization has to demonstrate responsiveness and to search actively for opportunities and pursue these opportunities, in order to be a proactive. In addition, being a proactive, improving organization is necessary to plan and implement new and creative strategies to pursue these opportunities and to deal with any threats. An organization needs to respond to their internal or external changes, and to react immediately to any changes, as these changes could be in market conditions or in customer needs.

4.3 Competencies

According to Zhang and Sharifi (1999), an organization can achieve competencies only when it applies a strategic vision, uses appropriate IT applications, attempts to produce a high-quality product or service, deals with change management, acts in a cost-effective manner, develops business practices and gains the necessary skills.

Mason (2010) explained that competencies significantly contribute to achieving a competitive advantage, in that an agile company should demonstrate the appropriate competencies that help in creating customer opportunities and responding to these opportunities. Moreover, Kharabe *et al.* (2013) asserted that competencies are an important source of sustained competitive advantage in organizations, especially in a turbulent business environment.

4.4 Sensing capability

Lin and Wang (2015) argued that organizations need to distinguish and identify their opportunities and threats from their business environment. These organizations have to gather, filter and process market information in order to determine its meaning, as well as to determine the successful innovations needed and to reduce difficulties which limit their progress.

Furthermore, Nieves *et al.* (2016) argued that sensing capability is one of the most important and essential requirements of organizations in that it allows businesses to take advantage of any business opportunities that appear. This, in turn, fosters product innovation.

5. Hypotheses development

5.1 The relationship between ERP systems and service differentiation

According to Freeman (2001), information and communication technologies affect competitive advantage in a broad way, as they can help to find information easily and, through innovation, organizations can perform things differently, thus opening up opportunities for differentiation. Economic value is created by the Internet, as Michel Porter mentioned.

Furthermore, Vogel (2005) investigated the relationship between information technology and competitive advantage. A positive relationship was found between these variables, in that competitive advantages are correlated with each of the competencies of information technology: low cost, innovation and customer services were affected and improved by information technology, electronic collaboration of business and a flexible internet infrastructure. Agility was also found to be influenced by IT competencies.

Ram, Corkindale, and LuWu (2014) argued that there are two vital factors that help in achieving differential advantages when implementing ERP systems. These two factors are equipping employees with effective education and training and integrating ERP systems effectively in the external and internal systems of an organization. In addition, evidence of the role of integration and the role of training and education in achieving a competitive advantage was provided in their study.

On the other hand, Hwang, Yang, and Hong (2015) suggested that the strategies of implementing ERP systems may not directly affect the outcomes of organizational performance, although IT-enabled combinative capabilities that can facilitate the implementation of these systems may affect the outcomes of organizational performance. The implementation and the impact of these systems may not be as apparent in certain companies or operations.

Hidayat and Akhmad (2016), Handoko, Aryanto, and So (2015) and Azevedo, Romaob, and Rebeloc (2012) argued that ERP has a direct influence or positive effect on competitive advantage. They investigated how a competitive advantage can be achieved through the use of ERP systems. The significant effect of ERP systems is seen on differentiation strategy and low-cost strategy. In addition, the absence of IT has an impact on critical success factors such as business development and improving competitiveness. Azevedo *et al.* (2012) also explained that the limitations of ERP systems could affect the process of continuous improvement and the quality of customer services. Therefore, the following hypothesis is proposed.

H1. ERP system usage significantly and positively affects service differentiation in the Jordanian hotel sector.

5.2 ERP systems and organizational agility

Lowry and Wilson (2016) argued that information technology applications are good investment for those who are involved in business. As long as they depend on these applications and implement effective strategies, their organization will remain agile and competitive. Yeganegi and Azar (2012) asserted that organizations become more organized with the use of information technology. They argued that it helps to increase the speed of their operation by increasing the coordination of their components, which in the end increases their agility. Chen and Siau (2011) explained how a competitive advantage has increased through the lens of organizational agility and business intelligence, and they clarify that IT infrastructure flexibility is the main source of organizational agility.

Moreover, Navaie, Monfared, and Radfar (2013) discussed that IT has a significant effect on organizations, in that it facilitates the business activities of an organization, and it has a positive effect on organizational agility, which, in turn, affects competitive advantage. Furthermore, Nzewi and Moneme (2016) argued that IT applications allow organizations to detect and respond to these changes quickly and flexibly, leading to a change in their strategies according to their customers' requirements, and this helps the organization to be agile. They added that an agile organization differs from a traditional organization in terms of the response that they give in light of the business environment, in addition to the different attributes that an organization fosters such as flexibility, responsibility, suitability and speed. They argued that IT applications have a significant effect on an agile organization such as the speed of data processing, using different and flexible software, facilitating and speeding up communication between different departments and improving services and goods. Therefore, the following hypotheses are proposed:

H2. ERP system usage significantly and positively affects flexibility in the Jordanian hotel sector.

H3. ERP system usage significantly and positively affects responsiveness in the Jordanian hotel sector.

H4. ERP system usage significantly and positively affects competencies in the Jordanian hotel sector.

H5. ERP system usage significantly and positively affects sensing capability in the Jordanian hotel sector.

5.3 Organizational agility and service differentiation

Yeganegi and Azar (2012) argued that an agile organization must be characterized by rapid adaptation, and it should adapt flexibly and effectively. As they define it, being a flexible organization is to have the ability to achieve different goals by using similar facilities. They added that an organization should have the ability to figure out changes and respond to them quickly. Furthermore, Navaie *et al.* (2013) argued that responsiveness to change in a timely and flexible manner, performing activities in the shortest possible time, attaining the organization's goals and conducting different processes with the same facilities are what an organization requires in order to be agile. Agile organizations may be able to offer their customers better services than non-agile organizations. Therefore, the following hypotheses are proposed:

H6. Flexibility significantly and positively affects service differentiation in the Jordanian hotel sector.

H7. Responsiveness significantly and positively affects service differentiation in the Jordanian hotel sector.

H8. Competencies significantly and positively affect service differentiation in the Jordanian hotel sector.

H9. Sensing capability significantly and positively affects service differentiation in the Jordanian hotel sector.

5.4 The mediation effect of organizational agility

Muretta (2013) argued that all organizations that implement ERP systems are improving enforcement and compliance of their respective business strategies and improving integration with information technology strategy. Zhen, Xie, and Dong (2021) indicated that information technology helps in exploitation and exploration of organizational agility. Aburub (2015) explained that ERP system usage is not the only factor that affects organizational agility, but there are different factors such as business process, routines, structures, politics, culture and environments. In this way, using these systems enhances the management's integration levels and the coordination between different functional areas, providing valuable information, which improves managers' decisions. Darvishmotevali, Altinay, and Köseoglu (2020) stated that organizational agility has impact on the relationship between competitive and technological uncertainty and organizational creativity within hotel industry. Moreover, Navaie *et al.* (2013) indicated that organizational agility can really help to achieve a competitive advantage. So, one aim of this research is to find the mediating effects of organizational agility on the relationship between ERP system usage and service differentiation. Based on that, the following hypotheses are proposed:

H10. Flexibility partially mediates the effect of ERP system usage on service differentiation in the Jordanian hotel sector.

H11. Responsiveness partially mediates the effect of ERP system usage on service differentiation in the Jordanian hotel sector.

H12. Competencies partially mediates the effect of ERP system usage on service differentiation in the Jordanian hotel sector.

H13. Sensing capability partially mediates the effect of ERP system usage on service differentiation in the Jordanian hotel sector.

6. Research model

In this research, and based on the literature that has been reviewed (Aburub, 2015; Nieves *et al.*, 2016; Zhang & Sharifi, 1999; Koseoglu, Parnell, & Topaloglu, 2013; Morgan, Kaleka, & Katsikeas, 2004; Lin & Wang, 2015), a new research model has been formulated as shown in Figure 1. This research model is presented and examined empirically in the context of the hotel sector. This figure shows the model, which includes three constructs, namely ERP system usage, service differentiation and organizational agility. The model shows that using ERP systems may lead to achieving service differentiation. Moreover, it shows that organizational agility dimensions may have a mediating effect on the relationship between ERP system usage and service differentiation. The constructs were measured using previous validated studies. Specifically, the measures of ERP system usage were adopted from Zain, Rose, Abdullah, and Masrom (2005). This construct includes three items. The measures of service differentiation were developed based on Koseoglu *et al.* (2013) and Morgan *et al.* (2004). This construct contains eight questions that measure the development and improvement of different services offered by hotels in Jordan. Moreover, the measures of organizational agility were adopted from Nieves *et al.* (2016), Lin and Wang (2015) and Zhang and Sharifi (1999). This construct includes 24 items. Measurement items are shown in Appendix. All the constructs were measured using a five-point Likert scale running from strongly disagree to a strongly agree. The final questionnaire, which consisted of 35 questions, was then validated by three professors in the field. These professors were chosen because they had published extensively about mobile learning.

7. Data collection

Data were collected using self-administrated survey from 122 hotels in Jordan. Questionnaires were distributed to 122 hotels. The total number of hotels that responded was 92. Eleven hotels refused to answer the questionnaires for privacy reasons, while 19 hotels did not return the questionnaires, so the response percentage was 75.41%. Questionnaires were distributed to heads of human resources or marketing departments in

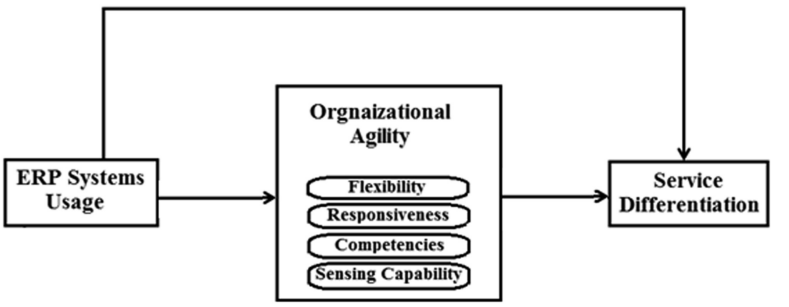

Figure 1.
Research model

the hotels. The department was given a soft copy (online questionnaire) or hard copy, depending upon their request. The highest percentage of respondents was between the ages of 31-40 years (63%), 19% of them were between 41-50 years, 13% of respondents were under 30 and around 5% were over 50. In terms of the educational level of the respondents, 83% of them had bachelor degree, 9% of respondents had diploma-level education and 6% had master's degree. Only 1% of respondents had PhD degree and 1% of respondents had only high school degree. In terms of respondents' experience, 11% of respondents had less than 5 years, 37% of respondents had less than 10 years and greater than or equal 5 years, 26% of respondents had less than 15 years and greater than or equal 10 years, 17% of respondents had less than 20 years and more than or equal 15 years and 9% of the respondents had more than 20 years. Moreover, 87% of respondents were male and 13% were female.

8. Scale assessment

Factor analysis for the proposed model showed that all items were above 0.55 except for three: two from variable flexibility and one from variable responsiveness. These three items were deleted, and the rest of the items identified with the proposed model are acknowledged by Falk and Miller (1992). The Cronbach's alpha reliability coefficients of the variables were obtained, and the results for all the variables were above 0.7, as shown in Table 2. To examine the convergent validity for all the variables in the proposed model, composite reliability (CR) and average variance extracted (AVE) were used. As suggested by Fornell and Larcker (1981), the CR values should be more than 0.70, while the AVE should be more than 0.50. Table 1 shows that the results of CR of all the variables are more than 0.70. Moreover, the results of AVE for all the variables are more than 0.50. The criterion of Fornell and Larcker (1981) was used to assess discriminant validity. This indicates that the AVE exceeded the squared correlations between all pairs of variables, as shown in Table 1.

9. Hypotheses testing

Partial least squares (PLS) method was used to test our research model. As shown in Figure 2 and Table 2, the results support H1 ($T = 5.416, \beta = 0.124, \alpha \leq 0.05$), confirming the positive association between ERP systems usage and service differentiation in the Jordanian hotel sector. However, the findings confirm H2 ($T = 6.616, \beta = 0.471, \alpha \leq 0.05$), H4. ($T = 3.055, \beta = 0.281, \alpha \leq 0.05$) and H5 ($T = 3.126, \beta = 0.291, \alpha \leq 0.05$). Moreover, the results do not confirm H3 ($T = 1.906, \beta = 0.199, \alpha \leq 0.05$). Therefore, there is positive association between ERP system usage and flexibility, competencies and sensing capability in the Jordanian hotel sector, and the relationship between ERP usage and responsiveness is not significant. Moreover, the results support H6 ($T = 2.869, \beta = 0.291, \alpha \leq 0.05$) and H9 ($T = 2.837, \beta = 0.298$ $\alpha \leq 0.05$), confirming that flexibility and sensing capability positively affect service differentiation in the Jordanian hotel sector. Furthermore, the findings do not support H7

	Cronbach alpha	CR	AVE	ERP	SD	Flex	SC	Comp	Resp
ERP	0.853	0.927	0.777	0.754					
SD	0.852	0.866	0.503	0.355	0.847				
Flex	0.840	0.890	0.620	0.420	0.422	0.785			
SC	0.869	0.881	0.607	0.277	0.325	0.521	0.715		
Comp	0.814	0.829	0.580	0.388	0.241	0.561	0.554	0.782	
Resp	0.706	0.711	0.529	0.385	0.265	0.141	0.324	0.244	0.814

Note(s): ERP: ERP usage; SD: service differentiation; Flex: flexibility; SC: sensing capability; Comp: competency; Resp: responsiveness

Table 1. Validation of measurements

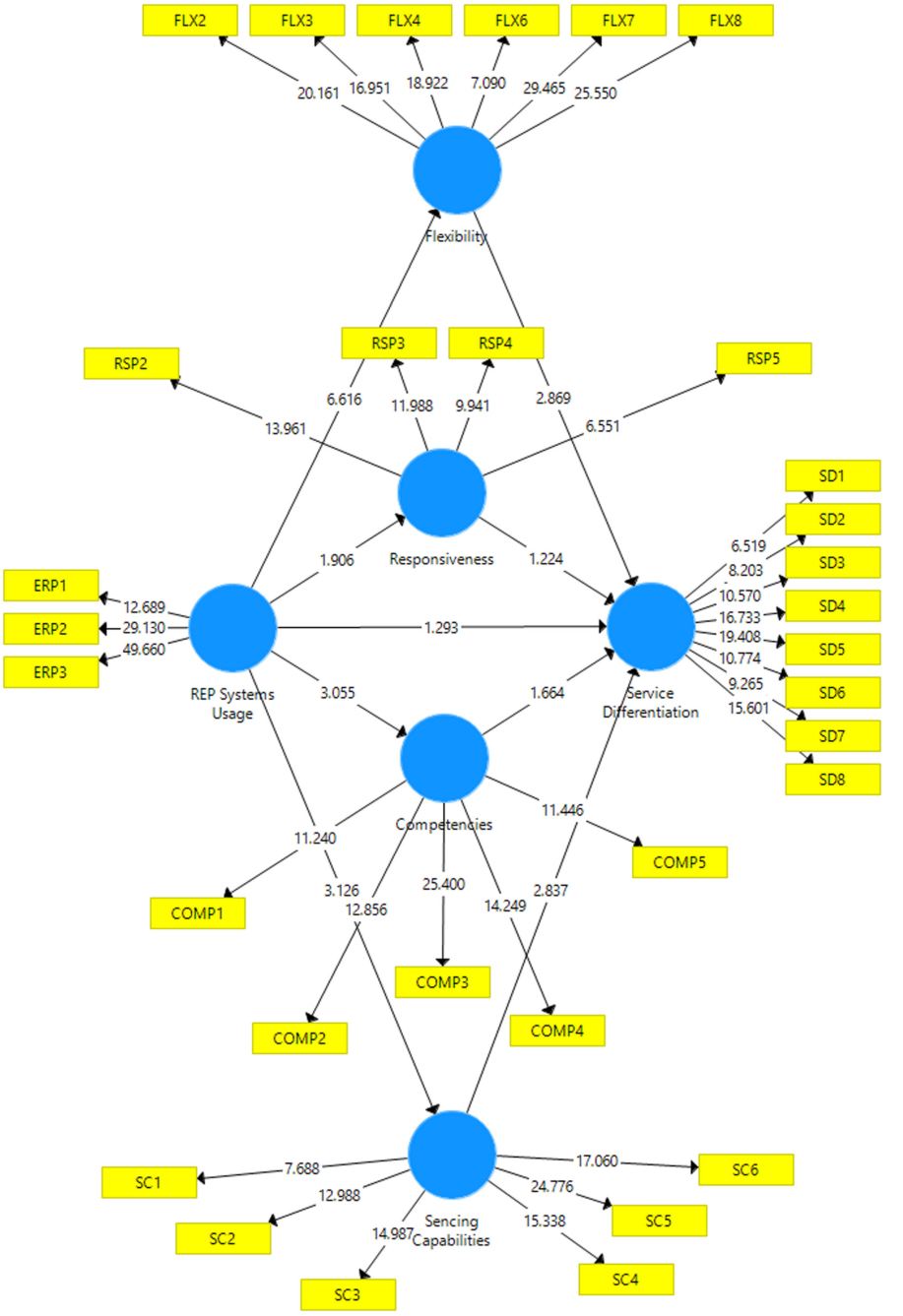

Figure 2.
Bootstrapping *T* values for the relationship between ERP system usage and service differentiation with mediation via organizational agility

Hypothesis No	Relations	*B*	*T* value	*p*-value	Decision (reject/accept hypothesis)
H1	ERP usage → service differentiation	0.124	5.416	0.000	Accepted
H2	ERP usage → flexibility	0.469	6.616	0.000	Accepted
H3	ERP usage → responsiveness	0.199	1.906	0.057	Rejected
H4	ERP usage → competencies	0.281	3.055	0.002	Accepted
H5	ERP usage → sensing capability	0.291	3.126	0.002	Accepted
H6	Flexibility → service D	0.245	2.869	0.004	Accepted
H7	Responsiveness → service D	0.171	1.224	0.222	Rejected
H8	Competencies → service D	0.178	1.664	0.097	Rejected
H9	Sensing capability → service D	0.298	2.837	0.005	Accepted
H10	ERP usage → FLX → service D		2.869	0.004	Accepted
H11	ERP usage → RSP → service D		1.224	0.222	Rejected
H12	ERP usage → COM→ service D		1.664	0.097	Rejected
H13	ERP usage → SC→ service D		2.837	0.005	Accepted

Table 2.
The results of testing the hypothesis

($T = 1.224, \beta = 0.171, \alpha \leq 0.05$) and H8 ($T = 1.664, \beta = 0.178, \alpha \leq 0.05$). Thus, the relationship between responsiveness and service differentiation is not significant. Also, competencies do not affect service differentiation.

Regarding mediation effects, since T value between ERP system usage and flexibility is 6.616, T values between flexibility and service differentiation is 2.869 and T value of ERP systems usage and service differentiation is 5.416, H10 is accepted. Regarding H11, since T value of relationship between ERP systems and responsiveness is 1.906 and T value of relationship between responsiveness and service differentiation is 1.224, H11 is not accepted. Therefore, responsiveness fully mediates the effect of ERP system usage on service differentiation in the Jordanian hotel sector. Since T value between ERP systems usage and competencies is 3.055 and T value between competencies and service differentiation is 1.664, H12 is not accepted. Moreover, because of T value of relationship between ERP usage and sensing capability is 3.126 and T value of relationship between sensing capability and service differentiation is 2.837, H13 is accepted.

10. Discussion

The hotels are affected by different factors such as economic, environmental and political issues, which led to increasing uncertainty. Therefore, hotels need to be agile to respond to these issues (Darvishmotevali *et al.*, 2020).

According to Melián-Alzola, Fernández-Monroy, and Hidalgo-Peñate (2020), hotel management faces numerous changes influencing the tourism industry, so it is oriented toward organizational agility in order to achieve service differentiation. This paper aims to explore the impact of ERP usage on service differentiation, and the mediating role of organizational agility on the relationship between ERP usage and service differentiation in the hotel sector in Jordan.

A new research model was developed and examined in relation to the hotel sector in Jordan. This paper extends the previous literature by testing the assumption that if organizations need to achieve service differentiation, they have to focus more on ERP systems. Moreover, achieving organizational agility will decrease volatility, unpredictability and uncertainty which will enhance service differentiation.

The results of the research show that ERP system usage has a positive impact on service differentiation, which indicates the importance of IT's role in developing the hotel sector and

making their services differentiated. For example, many software packages can support hotels' internal and external operations and management, which lead to better relationships with stakeholders. According to Rahimi and Kozak (2017), hotels can use tools like CRM to build relationships with their customers.

Furthermore, investment in ERP systems does not always meet an organization's objectives, particularly service differentiation. Given the continuous changes in the business environment, the hotel environment becomes volatile and uncertain. Therefore, developing an agile organization will help it to cope with a dynamic environment and unexpected changes and events. This research investigated the influence of organizational agility on the relationship between ERP usage and service differentiation. The results show that organizational agility partially mediates the relationship between ERP usage and service differentiation particularly within flexibility and sensing capability. This indicates that hotels need to be agile enough to face and adapt to an unexpected dynamic and volatile environment. Furthermore, managers of agile hotels can successfully handle rapid environmental changes. They can exploit the opportunities that arise from a dynamic and complex environment (Hsiao, Lee, & Hsu, 2017). Therefore, employees should be well educated and trained to be able to adapt to new technologies and work in a dynamic environment. This is consistent with researchers (Appelbaum, Calla, Desautels, & Hasan, 2017; Darvishmotevali *et al.*, 2020) as they indicated that organizational agility is considered as a strategy that can help an organization to cope with environmental changes.

The results also show that information technology, particularly ERP systems, enhances organizational agility. ERP systems provide information management capabilities, work coordination, standardization, coordination between different departments and functional areas, coordination of daily activities and so forth. Therefore, ERP systems positively influence the agility of hotels, particularly their flexibility, competencies and sensing capability. Moreover, the results show that the relationship between ERP system usage and responsiveness is not significant, and the relationship between responsiveness and service differentiation is not significant, as data have been collected during COVID-19 pandemic, when probably most managers of hotels in Jordan thought that ERP system could not help positively at the time of strict government actions during COVID-19 pandemic. Furthermore, the output of the research shows that competencies did not influence service differentiation.

This research also contributed in emphasizing the need of Jordan hotels to implement and use ERP systems in achieving service differentiation. In addition, it also emphasized the applicability of organizational agility on the hotel sector as it is implemented mainly in the manufacturing sector, and its direct role in achieving service differentiation in this sector.

Furthermore, a new research model has been developed to investigate the mediating effect of organizational agility on the relationship between ERP system usage and service differentiation. This research model includes three main variables, namely ERP usage, organizational agility and service differentiation.

11. Theoretical implications

This research is one of the studies that focused on the mediating role of organizational agility in the relationship between ERP system usage and service differentiation in the hotel sector in Jordan, so this could be a new addition to the Arab library. This research highlights the impact of ERP usage on service differentiation, which can be additional reference that could benefit researchers in the future and bring attention of hotel managers in Jordan to the importance and advantages of this research. The theoretical importance of this research also comes from the importance of the information obtained from its sources that dealt with the impact of using business intelligence (quality of data, analytical skills, and level of use) on the quality of decision-making in the Jordanian bank sector in Amman.

In addition, this study highlights that ERP usage has a positive impact on achieving organizational agility and service differentiation, so using these systems will help hotels in Jordan to implement agility capabilities which, in turn, help to achieve service differentiation. However, there are real challenges in hotel sector, as implementation of ERP is expensive and time-consuming. The outcomes of this research can have additional reference that could benefit researchers in the future and bring attention of hotel managers in Jordan to the importance and advantages of this research. The new research model been developed in this research is expected to contribute to the academic literature in the fields of ERP systems, organizational agility and service differentiation. Furthermore, the results of the research highlighted the importance of using technology, and particularly ERP systems, to achieve service differentiation in hotel sector in Jordan.

12. Practical implications

The contribution of this research focuses on investigation the mediating role of organizational agility on the relationship between ERP system usage and service differentiation in the hotel sector in Jordan. Moreover, this research investigated the applicability of organizational agility on the hotel sector as it is mainly implemented in the manufacturing sector. The results show that organizational agility and its dimensions have a partial mediating role in the relationship between ERP system usage and service differentiation except responsiveness which has a full mediating role. So being an agile hotel will increase the ability to achieve service differentiation by using ERP systems. Therefore, hotel practitioners in Jordan should focus on applying required technologies and achieving organizational agility in order to achieve service differentiation. Moreover, the research may provide advice to help hotel managers and marketers in Jordan to develop suitable marketing strategies to attract and maintain hotel customers. Also, the research highlights the importance of organizational agility in achieving service differentiation in the hotel sector in Jordan.

13. Conclusion and future research

The research investigated the relationship between ERP system usage and service differentiation, and the mediating role of organizational agility on this relationship. The results showed that hotels in Jordan should increase use of ERP systems, as these systems help them to achieve service differentiation. Furthermore, ERP system usage also has a positive relationship with organizational agility, so condensation using these systems will help hotels in Jordan to implement agile capabilities, which, in turn, help to achieve service differentiation. Organizational agility has a positive relationship with service differentiation, particularly within responsiveness and sensing capability. In addition, organizational agility has a partial mediating role in the relationship between ERP systems usage and service differentiation. So, being an agile hotel will increase the ability to achieve service differentiation by using ERP systems.

The research is a good base for researchers who are eager to expand on this topic and to investigate another mediator that could affect the relationship between ERP systems usage and service differentiation. Alternatively, it is possible to conduct similar research by choosing another sample from different sectors in Jordan or other countries in the region.

In addition, a recommendation for further studies could be to study the mediating effect of organizational agility on the relationship between other systems usage and service differentiation, as there are different systems implemented in the hotel sector in Jordan. One of the main difficulties for the author was that the research was carried during COVID-19 pandemic when there were many restrictions the government had placed as safety measures, and visits to hotels were limited.

References

Aburub, F. (2015). Impact of ERP systems usage on organizational agility: An empirical investigation in the banking sector. *Information Technology and People*, *28*(3), 570–588.

Appelbaum, S. H., Calla, R., Desautels, D., & Hasan, L. (2017). The challenges of organizational agility (part 1). *Industrial and Commercial Training*, *49*(1), 6–14.

Azevedo, P. S., Romaob, M., & Rebeloc, E. (2012). Advantages, limitations and solutions in the use of ERP systems (enterprise resource planning) – a case study in the hospitality industry. *Procedia Technology*, 5, 264–272.

Bacanu, B. (2010). Differentiation vs. Low cost strategies in Romania. *Management and Marketing*, *5*(2), 135–142.

Beldona, S., Beck, J., & Qu, H. (2014). Implementing enterprise resource planning in a hotel: Toward theory building. *International Journal of Hospitality Information Technology*, *2*(1), 9–22.

Chen, X., & Siau, K. (2011). Impact of business intelligence and IT infrastructure flexibility on competitive performance: An organizational agility perspective. In *Thirty Second International Conference on Information Systems Shanghai*.

Darvishmotevali, M., Altinay, L., & Köseoglu, M. A. (2020). The link between environmental uncertainty, organizational agility, and organizational creativity in the hotel industry. *International Journal of Hospitality Management*, *87*, 102–499.

Deshmukh, P., Thampi, G. T., & Kalamkarc, V. R. (2015). Investigation of quality benefits of ERP implementation in Indian SMEs. *Procedia Computer Science*, *49*, 220–228.

Falk, R. F., & Miller, N. B. (1992). "A primer for soft modeling", Report, University of Akron, January.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equations models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Freeman, O. (2001). The E-world, information and competitive advantage: What works? *Business Information Review*, *18*, 43–51.

Handoko, B., Aryanto, R., & So, I. (2015). The impact of enterprise resources system and supply chain practices on competitive advantage and firm performance: Case of Indonesian companies. *Procedia Computer Science*, *72*, 122–128.

Hidayat, R., & Akhmad, S. (2016). Effects of the enterprise resource planning (ERP) on competitive advantage and performance of manufacturing firms in Indonesia. *Journal of Engineering and Applied Sciences*, *11*(10), 2298–2303.

Hsiao, C., Lee, Y. H., & Hsu, H. H. (2017). Motivated or empowering antecedents to drive service innovation? *Service Industries Journal*, *37*(1), 5–30.

Hwang, D., Yang, M. G. M., & Hong, P. (2015). Mediating effect of IT-enabled capabilities on competitive performance outcomes: An empirical investigation of ERP implementation. *Journal of Engineering and Technology Management*, *36*, 1–23.

Izza, S., ImacheL, R., Vincent, L., & Lounis, Y. (2008). An approach for the evaluation of the agility in the context of enterprise interoperability. *Enterprise Interoperability*, *3*, 3–14.

Kharabe, A., Lyytinen, K., & Grover, V. (2013). Do organizational competencies influence how enterprise systems foster organizational agility?. *Thirty Fourth International Conference on Information Systems Milan*.

Khoshlahn, M., & Ardabili, F. S. (2016). The role of organizational agility and transformational leadership in service recovery prediction. *Procedia - Social and Behavioral Sciences*, *230*, 142–149.

Koseoglu, M., Parnell, J., & Topaloglu, C. (2013). Assessing the strategic relevance of organizational capabilities: Evidence from Turkish hotels. *International Journal of Management and Decision Making*, *12*(2), 96–120.

Laudon, K. C., & Laudon, J. P. (2021). *Management information systems: Managing the digital firm*. Pearson Education.

Law, R., & Jogaratnam, G. (2005). A study of hotel informationtechnology applications. *International Journal of Contemporary Hospitality Management*, *17*(2), 170–180·.

Lin, J. H., & Wang, M. Y. (2015). Complementary assets, appropriability, and patent commercialization: Market sensing capability as a moderator, *Asia Pacific Management Review*, *20*, 141–147.

Lowry, P., & Wilson, D. (2016). Creating agile organizations through IT: The influence of internal IT service perceptions on IT service quality and IT agility. *Journal of Strategic Information Systems*, *25*, 211–226.

Mason, A. J. (2010). Inside the black box: Investigating agility as a dynamic capability for sustaining a competitive advantage within consulting firms. Doctoral dissertation, Available from ProQuest dissertations and theses global database (UMI Number: 3427249).

Melián-Alzola, L., Fernández-Monroy, M., & Hidalgo-Peñate, M. (2020). Information technology capability and organisational agility: A study in the canary islands hotel industry. *Tourism Management Perspectives*, *33*, 100–606.

Metaxiotis, K., & Liagkouras, K. (2017). The current state of ERP systems in banking sector. *International Research Journal of Electronics and Computer Engineering*, *3*(1), 2412–2433.

Ministry of Planning and International Cooperation (MOP) (2016). The global competitiveness report 2015-2016. Available from: http://www.mop.gov.jo/echobusv3.0/SystemAssets/2b2aab51-3906-40d4-904a-1676e1f9b277.pdf

Molina-Castillo, F. J., Rodríguez, R., López-Nicolas, C., & Bouwman, H. (2022). The role of ERP in business model innovation: Impetus or impediment. *Digital Business*, *2*(2), 100024.

Morgan, N. A., Kaleka, A., & Katsikeas, C. S. (2004). Antecedents of export venture performance: A theoretical model and empirical assessment. *Journal of Marketing*, *68*, 90–108.

Muretta, M. (2013). The influence of enterprise systems on business and information technology. *International Academic Research Conference*.

Nafei, W. (2016a). The effect of organizational agility on quality of work life: A study on commercial banks in Egypt. *International Journal of Business and Management*, *11*(6), 271–285.

Nafei, W. (2016b). The role of organizational agility in enhancing organizational excellence: A study on telecommunications. *International Journal of Business and Management*, *11*(4), 121–135.

Navaie, H., Monfared, J., & Radfar, R. (2013). The effect of application of information technology on organizational agility using the fuzzy method. *Shiraz Journal of System Management*, *1*(4), 99–118.

Nieves, J., Quintana, A., & Osorio, J. (2016). Organizational knowledge, dynamic capabilities and innovation in the hotel industry. *Tourism and Hospitality Research*, *2*, 158–171.

Njihia, E., & Mwirigi, F. M. (2014). The effects of enterprise resource planning systems on firm's performance: A survey of commercial banks in Kenya. *International Journal of Business and Commerce*, *3*(8), 120–129.

Nzewi, H., & Moneme, P. (2016). Business agility and competitive advantage of selected commercial banks in Anambra State, Nigeria. *Pyrex Journal of Business and Finance Management Research*, *2*(8), 81–88.

Omari, I., Ali, M., Mahmoud, R., & Jawabreh, O. (2015). The Arab spring impacts on the Jordanian hotels sector. *International Journal of Humanities and Social Science*, *5*(4), 159.

Rahimi, R., & Kozak, M. (2017). Impact of customer relationship management on customer satisfaction: The case of a budget hotel chain. *Journal of Travel and Tourism Marketing*, *34*(1), 40–51.

Ram, J., Corkindale, D. & LuWu, M. (2014). ERP adoption and the value creation: examining the contributions of antecedents. *Journal of Engineering and Technology Management*, *33*, 113–133.

Ruivo, P., Johansson, B., Sarker, S., & Oliveira, T. (2020). The relationship between ERP capabilities, use, and value. *Computers in Industry*, *117*, 103–209.

Sambamurthy, V., Wei, K., Lim, K., & Lee, D. (2007). IT-enabled organizational agility and firms' sustainable competitive advantage. *ICIS 2007 Proceedings. ICIS Proceedings* (Vol. 91). Available from: https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1248&context=icis2007 (accessed 3 September 2017).

Shdeifat, O., Mohsen, M., Mustafa, M., al-Ali, Y., & Al-Mhaisen, B. (2020). *Tourism in jo Implementation of pilot studies GREEN-TAS*. Jordan: The Hashemite University.

Tanwar, R. (2013). Porter"s generic competitive strategies. *IOSR Journal of Business and Management*, *15*(15), 11–17.

Vakulenko, Y., Arsenovic, J., Hellström, D., & Shams, P. (2022). Does delivery service differentiation matter? Comparing rural to urban e-consumer satisfaction and retention. *Journal of Business Research*, *142*, 476–484.

Vogel, M. (2005). Leveraging information technology competencies and capabilities for a competitive advantage. Ph.D. United State: University of Maryland University College (doctoral dissertation). Available from ProQuest dissertations and theses global database. (UMI Number: 3165264).

Wheelen, T., Hunger, J., Hoffman, A., & Bamford, C. (2015). *Strategic management and business policy*. Harlow: Pearson Educated.

Yeganegi, K., & Azar, M. (2012). The effect of IT on organizational agility. *Proceedings of the 2012 International Conference on Industrial Engineering and Operations Management Istanbul Turkey*, July 3-6.

Zain, M., Rose, R.C., Abdullah, I., & Masrom, M. (2005). The relationship between information technology acceptance and organisation agility in Malaysia. *Information and Management*, *42*(6), 829–839.

Zhang, Z., & Sharifi, H. (1999). A methodology for achieving agility in manufacturing organisations: An introduction. *International Journal of Production Economics*, *62*, 7–22.

Zhen, J., Xie, Z., & Dong, K. (2021). Impact of IT governance mechanisms on organizational agility and the role of top management support and IT ambidexterity. *International Journal of Accounting Information Systems*, *40*, 100501.

Appendix

ERP system usage

Our hotel uses the ERP systems very intensively (many hours per day, at work).
Our hotel uses the ERP systems very frequently (many times per day, at work).
Overall, our hotel uses the ERP systems a lot.

Service differentiation

Our hotel achieves and maintains quick service delivery.
Our hotel offers extensive customer services.
Our hotel develops its services effectively.
Our hotel uses new methods and technologies to create excellent services.
Our hotel intensifies advertising and marketing campaigns continuously.
Our hotel builds a strong brand identification to foster good reputation.
Our hotel develops and utilizes sales force to achieve its marketing plan.

Organizational agility

Flexibility

Our hotel introduces different service types without major adjustments.
Our hotel responds effectively to changes in planned delivery time of services.
Our hotel effectively changes capacity of available facilities to meet fluctuations in guests' demands.

Our hotel effectively increases its systems' capability and capacity (e.g. quality and number of services offered) when required.
Transfers of our employees are conducted easily between the hotel' units.
Our hotel easily changes service combinations from one period to the next.
Our employees perform different types of the hotel operations effectively.
Our employees perform a broad range of tasks effectively.

Responsiveness
Our hotel responds quickly to customer complaints.
Our hotel implements plans on time.
Our hotel responds quickly to competitors' campaigns.
Interdepartmental meetings are held regularly to respond to external changes.
Our hotel responds quickly to changes in customer demands.

Competencies
Our hotel effectively challenges and outperforms new entries to market.
Our hotel maintains a strong competitive position at the local level.
Our hotel maintains a strong competitive position at the global level.
Our hotel has a strategic basis in competition (price, service differentiation, time and quality).
Our hotel effectively predicts its market share considering the intensity of competition.

Sensing capability
Our hotel acquires and uses market information effectively to support its operations.
Our hotel acquires and uses market information effectively to provide better services.
Our hotel effectively anticipates rivals' actions.
Our hotel continuously predicts guests' demands.
Our hotel effectively establishes database to serve its guests.
Our hotel effectively integrates market and technology information to suit its operation.

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