

The Use of ICT in the Decision Making Process: The Case of Macedonian Entrepreneurial Businesses

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1 Introduction

The rapid technological development and the growing use of information communication technology (ICT) in business organizations have become the centre of attention in past few years. A bulk of literature has been published on the need of renewing and adjusting the information technology function in business organisations (Guillemette and Pare 2012), the application of ICT in different industries (Francalanci and Galal 1998; Devaraj and Kohli 2000; Rivard 2000), different types of business organizations (Blili and Raymond 1993; Heintze and Bretschneider 2000) and in different areas of business management (Ellram and Zsidisin 2002; Devaraj and Kohli 2003; Croom 2006). Strategic management, precisely decision making process, being an important area of business management, has also been researched to investigate the influence of ICT in different industries, with particular emphasis on strategic decision making. The majority of such studies were conducted in developed countries like UK and USA (Andersen 2001, 2005). On the other hand, in developing countries the link between ICT and strategic management specifically the role of ICT in the strategic decision making (SDM) process is a very new subject of research. More recent studies highlight the need of frequently adapting and aligning their competitive strategies and information systems to compete in a highly dynamic marketplace, and employ high-level measures of the strategic fit of a firm's overall IS portfolio and the impact of fit on business performance (Mclaren et al. 2011). The present study investigates the use

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of ICT and their impact on the strategic decision making in three industries (manufacturing, trade and services) of a developing economy such as Macedonia.

The belief that technology is a source of competitive advantage is so widely accepted in the management and economics literature that it has become axiomatic. Morone (1989) considered technological innovation as the main force behind industrial development and productivity growth. For Porter (1983), it is a “source of change” in market and can be one of the factors behind the demise of dominant firms that were causing lack of competition in the industry. However, it is critically important to have a clear definition of technology before understanding the relationship between organizations and technology (Hassan 2006). A famous definition of technology was given by Galbraith (1967) who defined technology as “the systematic application of scientific or other organized knowledge to practical tasks” (Galbraith 1967, p. 23). In the current study, particular emphasis has been given on the notion that technology is neither mere knowledge nor just application but a combination of both. As put by Dutta, Lopez-Carlos and Mia (2006), technology is both software and hardware: it is the know-how of the scientific knowledge that can be used to solve practical problem as well as the tools and artefacts developed from that knowledge which can be used to achieve those solutions.

The use of technology in the business organization and market has been increased a lot since the last decade. Now, the creation and successful commercialization of technology, is among a company’s most potentially viable strategies (Hedelin and Allwood 2002; Shim and Siegel 2005). Nevertheless, it can succeed with the synergy of skilled management that (re)defines the company’s goals and competencies and through a good strategic planning process (Fletcher 1999). Utilization of information technology for gaining strategic advantage over competitors should be the focus of organizational strategic planning to survive in the rapidly evolving world of e-business (Shim and Siegel 2005).

2 ICT and Strategic Decision Making: Empirical Evidence

There is a vast of literature that investigates the role of technology in business processes. The core issue of this chapter is the elaboration of the utilization of technological advancements in SDM process along with scholarly suggestions and practical examples of different organisations and businesses. It encompasses the main issues related to the strategic management, decision making process, information utilization and benefits of information technology in SDM. Moving ahead, the chapter discusses the respective Macedonian markets and their business environment, along with the current enhancements and requirements of integrating ICT into major and small business to help in strategic decision making process. This part starts with a formal discussion of technology and business, and their successful integration; which can be used to benefit businesses and industries.

2.1 Integration of Technology in Business Environments

Technology, in business environments, is often seen as a vital necessity these days (Rivard 2000). Any business which defies technological advancements and innovation seems to be awkward, not only to its clients but also to business partners and dealers associated with it. However, in today's running environment, technology has impacted and integrated with almost all the small and large organisations and industries, to some extent (Francalanci and Galal 1998; Devaraj and Kohli 2000; Rivard 2000). Apart from them, businesses which intend to solely rely over technological innovations and advancements seek easiest possible ways to achieve their goals. This can be specifically explained in a manner that, with surrounding environment transforming gradually, they face some basic hurdles in their way of integrating technology as an umbilical organ of their process and functions. The integration of business, with technology is mostly done with an intention to reduce operational costs, increase efficiency of results, increase effective communication development, effective promotion, and progression towards development (Olalla 2000). In this process of integration, different organisations and businesses face various difficulties and hurdles, which are to be eliminated or ruled out with the help of effective planning and processes re-engineering (Ashrafi and Baghdadi 2008).

2.1.1 Technology as a Factor of Change

Technological change is the rate at which new knowledge is put into physical forms and diffused for use in the economy as a result of improved organisational performances. Major technological advances, such as the steam engine or microprocessors are known as general purpose technology as they have broad applications and productivity-enhancing effects in a number of different sectors. As a result, general purpose technologies induce dramatic economic changes by creating innovation that rejuvenates existing sectors and, in the process, create new industries and services. A historical example is the steam engine, while the Internet is a more recent example. The Dot-Com bubble notwithstanding, the Internet has fundamentally changed the way business transactions take place, creating efficiencies and productivity growth for existing firms as well as new opportunities for entrepreneurs (Feldman 2004). Technology development or introduction, itself, can become a catalyst of change in any organisation inclined towards integrating information technology in its processes and functions. According to Gibson (1997), any organisation which is changing its course of perception and processes, does so in order to achieve all or any one of these objectives:

1. To bring efficiency to overall business
2. To become leader in the industry through effective operations
3. To re-arrange the assembly and structure of operations
4. To bring economical and financial benefits
5. To rule out the competitors in industry
6. To increase company's reputation as a strong market component.

With its unique features, effective implementation of information technology systems and operations can make any organisation to achieve these goals. Not only this, technological advancements can eliminate some redundant processes which belong to traditional business processes, for instance, reporting more than once to the coordinator or manager, acknowledging the respective departments after the completion of a procedure, etc. Although, in a more general manner, if the matter of technological integration in businesses can be viewed with the Gibson (1997) proposal; it does really satisfy the advantages of integration. Explaining it; according to Gibson (1997), the first objective should be to bring efficiency to overall business. This is a very wide assertion, which seems to be satisfying the entire objective of technology integration. This has also been mentioned in Small Business Organisation's archives (2010), with technology termed as an 'enabler' of overall business efficiency. The second objective defined by Gibson (1997) deals with the effectiveness of operations and leadership in the respective industry; this has also been confirmed by Santa, Ferrer, Bretherton and Hyland (2009), that as technology increases the speed of operational procedures, the organisational processes complete at a more pace, entertaining customers and consumers with more feasibility and speed, resulting in an increased market value and name. Third objective is a specific one, objectifying the re-arrangement of assembly and structure of operations. According to Fernald and Ramnath (2004), technology itself drives the changes in the way of doing operations (organisational processes assembly), since the integration process requires a lot of restructuring and rearrangements, and these are unavoidable. In other words, the objective of restructuring and rearrangements of operations specified by Gibson (1997) is self-fulfilled with the integration of technological advancements. Similarly, the fourth objective specified by Gibson (1997) talks about bringing economic and financial benefits to the organisation. This can be viewed with a slightly different perspective i.e. through a sufficient investment made in the incorporation of technology, financial benefits can be achieved (Fernald and Ramnath 2004). Fifth objective is often completed indirectly, i.e. ruling out the competitors in the industry. Since every organisation should be working towards increasing its productivity and operational effectiveness rather than with an objective of ruling out competitors in the business. This, however, is done indirectly; according to Czerniawska and Potter (1998), effective implementation of technology within business procedures gives the business an advantage of being fast paced in the respective industry, a race which often never ends. Consequently, the last objective specified by Gibson (1997) states that technology should also be implemented with an objective of increasing company's or organisation's reputation as a strong player in the industry, which understands its processes and functions in such a manner that it can mould them in any form to extract desired results and outcomes.

2.1.2 ICT Business Tools for Managers

In order for managers to have an active role by using IT in their process of decision making they must have that fundamental knowledge of the IT tools. However, this

does not imply that those non-technical managers need to be specialist in each IT tool. It has to do with getting familiar with those tools and methods that can be used in the process of decision making. There are some IT applications such as:

- (a) **Decision Support Systems (DSS)** – applications are systems and subsystems that help managers make decisions based on data that is gathered from a wide range of sources. DSS applications are not single information resources, such as a database or a program that graphically represents sales figures, but the combination of integrated resources working together (Daft 2010). This type of system collects and analyses the data in order to present it in a way that can be interpreted by managers in order for them to make decisions.
- (b) **Enterprise resource planning (ERP)** – system is a set of integrated business applications, or modules, that carry out common business functions such as general ledger accounting, accounts payable, accounts receivable, material requirements planning, order management, inventory control, and human resources management (Brown et al. 2012). This kind of system also allows for real-time information to be shared among, manufacturers, customers, suppliers and other business partners. The major benefits of an ERP system are in terms of better information for strategic and operational decision making and planning, and greater efficiency, profitability, and growth.
- (c) **Customer relationship management (CRM)** – is a business tool that organizes, automates and synchronises business processes, mainly those dealing with sales, however they also incorporate activities regarding marketing, customer service and technical support. The main benefits deriving from CRM application are: quality and efficiency, decrease in overall costs, decision support, enterprise ability, customer attentions, and increase profitability.
- (d) **Intranet** – is a network operating within an organization that employs the TCP/IP protocol, the same protocol used on the Internet. However, compared to internet, intranet is not accessible from outside the organization; it is up to the organization to decide whether or not people within the organization have access to the Internet. An intranet presents some incredible advantages to the organization since they serve a variety of important uses within organizations. In many organizations, the intranet serves as a valuable communication tool between the organization and its employees and between employees as well as a repository of organizational information (Brown et al. 2012)
- (e) **E-commerce** – is commerce, but accelerated and enhanced by ICT, in particular the Internet. It enables customers, consumers and companies to form powerful new relationship which helps them to electronically exchange goods and services with no barriers of time or distance.

Although technology integration in business has many advantages and objectives specified by different researchers, but as for the scope of this particular study, it is needed to be mentioned at this stage that technological ‘advancements’ lead to an increased overall productivity, a benefit that any conventional business organisation can never achieve through manual and traditional methods of operations and procedures in Fig. 1, the impact of using IT on the business benefits are showed.

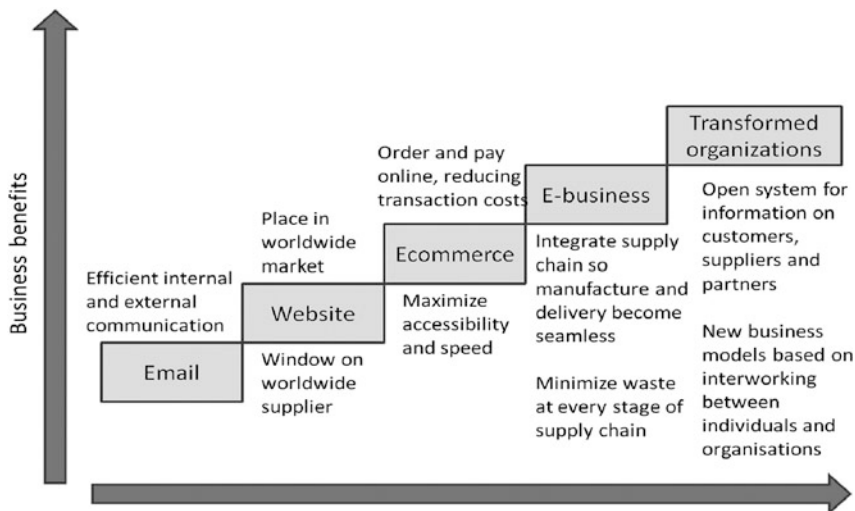


Fig. 1 Impact on using ICT on business benefits (Source: Sobhani 2008)

2.2 Decision Making and Problem Solving

Problem has been defined by many as the gap between the present undesirable situation and the future desirable situation (Agre 1982; Van Gundy 1988; Nolan 1989; Tallman and Gray 1990; Hicks 2004). Problem solving is, therefore, seen as the process of bridging this gap. It is being defined as the process of “moving toward a goal when the path to that goal is uncertain” (Martinez 1998, p. 605). The process of problem solving presented in Fig. 2 involves four phases: the recognition of problem, the evaluation of possible solution, the selection of most appropriate solution and the evaluation of the outcome (Tallman and Gray 1990).

The process involves a number of decisions and it seems very similar to the process of decision making. Huitt (1992) is of the opinion that decision making and problem solving are similar process as evident from their interchangeable use in the literature. Tallman and Gray (1990), however, found that problem solving and decision making, despite similarity in their process, are two different processes with different scope and limits and the two terms cannot be used interchangeably. He cited the example of decisions regarding marriage which may or may not involve problem-solving depending on the presence or absence of obstacles to marriage but definitely involves a process of decision making. Thus all problem solving processes involves decision making but all decision making process not necessarily involves problem solving.

Hicks (2004) recognised the difference between the process of problem solving and decision making. In his opinion, all non-trivial decisions are either choice-making decisions or problem-solving decisions. However, he claimed that majority of the decisions involve some form of problem solving and the interchangeable use

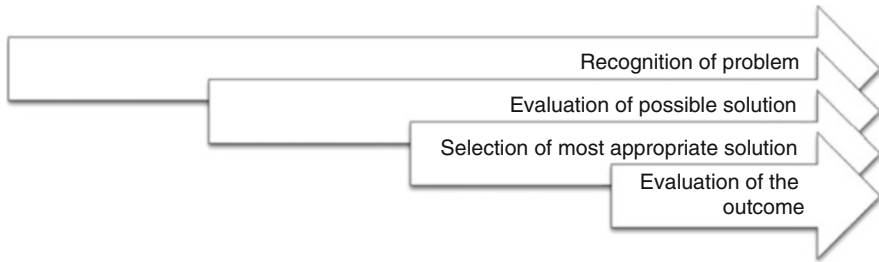


Fig. 2 The process of problem solving (Source: Tallman and Gray 1990)

of these two terms in the literature is acceptable if the decisions are particularly aimed at solving problems. However, this interchangeable use of problem solving and decision making in the literature has resulted in blurring the difference between the two terms and the misconception of the wide scope of decision making. Problem solving is one of the important goals of decision making but is not the only goal.

Problem solving decisions has long been recognised as key to the success of organisation (Caruth et al. 2009). Several models have been developed by the scholars to help managers make problem solving decision for example. Huitt (1992) found that the models of problem solving have four common phases: input phase in which problem or present situation is perceived and analysed; processing phase in which the possible alternatives are evaluated and one of the alternatives is selected as solution; output phase in which the selected solutions is planned and implemented and finally, a review phase in which the outcome of solution's implementation is evaluated and modified. However, Caruth, Caruth and Humphreys (2009), after critically reviewing these models, concluded that most of the recently developed models are too complex to be utilised by the managers and highlighted the need to develop practical models of problem initiated decision making that can offer much in the way of managerial utility.

2.3 Information and Strategic Decision Making

There is a bulk of literature describing the importance and role of information in strategic decision making process (e.g., Leidner and Elam 1995; Dawson 1996; Hedelin and Allwood 2002; Frishammar 2003; Calvasina et al. 2006). Business activities and decisions operating in an information environment are becoming increasingly complex as a result of the growing volumes and sources of potential relevant information for certain business activities and multiplying technologies which can be used for accessing and handling data and information. The role of information communication technologies (ICT) is about filtering and directing important information flows and providing consistent and flexible support. According to Kumar et al. (2007, pp. 1–2), “every case of decision making for a

problem situation tests the existing support mechanisms and provides valuable information for future situations, thus creating new knowledge and experience for participants involved, and in the case of right decision increasing confidence in future actions”.

Scholars view information gathering as imperative to strategic decision making whether the decision is problem initiated or not. The purpose of information gathering is to remove uncertainties (Frishammar 2003). Uncertainty can hinder the process of decision making particularly strategic decision making – because of its long-term and broad implications in an organisation. Managers, therefore, need to gather information related to their decision in order to predict the outcome of their decisions.

Information can be of many types. However, the main division of information with regard to strategic decision making is soft versus hard information and internal versus external information. Soft information is unquantifiable form of information which is characterised as broad, general and subjective (Frishammar 2003). On the other hand, hard information include the financial, statistical and factual data that is quantifiable and can be processed though different analytical techniques (Frishammar 2003). Frishammar (2003) conducted a multiple case study on four organisations and found that organisation used a combination of hard and soft information in strategic decision making. He further noted that soft information is used in the initial phases of decision making while hard information dominates the latter phases. He, therefore, concluded that soft information served as the basis for the verification of hard information. Dawson (1996), however believe that hard information is usually given precedence over soft information in strategic decision making. This is evident from the findings of Frishammar (2003) too. Three of the four organisations are found to given more importance to hard data. However, the mangers acknowledged that decision making cannot be based on hard data alone and the role of intuition, cognition and preferences cannot be neglected in Strategic Decision Making process.

Internal information refers to the information located inside the organisation while external information is the information gathered through external environment. Initially, Strategic Decision Making was seen as associated with external information only. Managers often make strategic decisions on the basis of scanning of external environment. However, in the past decade, scholars started to emphasize on the importance of internal information for strategic decision making. Walters, Jiang and Klen (2003) conducted a survey of several CEOs of small manufacturing firms to compare the importance given to internal and external information by these CEOs. It was found that both form of information are perceived by the CEOs as equally important. However, their study was limited to the CEOs of small firms and in the larger firms where gathering and management of internal information is relatively difficult, the situation may not be similar.

Whether the information is soft or hard and external or internal, the reliability and relevance of the information is the main concern in Strategic Decision Making (Jagdev et al. 2004). The information, particularly soft information, can be subject to people’s partiality (Dawson 1996). False information can led to false decision.

Because strategic decisions have long term impact on the entire organisation and cannot be replaced easily, managers cannot take the risk of making strategic decisions on the available information without verification. However, Dawson (1996) found that the information varies in the degree to which it is subject to verification.

In the today's highly diversified environment, information within and outside the organisation has become highly complex. The load of information has also increased with the technological advancement and the growing size and diversity of organisations (Leidner and Elam 1995; Iansiti 1998). With this growing load and complexity of information, it has become critically important to have timely access to relevant and reliable information during decision making process. Verification of collected information has become a problem with the growing size and complexity which can only be solved through the development of better technology for gathering and accessing soft and hard as well as internal and external information for strategic decision making. The ability to see into the future and anticipate the second and third order consequences of decisions no more requires the evaluation of past experience and the understanding of current scenario through environmental scanning is critically important for strategic decision making.

2.4 ICT and Strategic Decision Making

As discussed above, the collection and verification of information and its timely access to decision makers is the key requirement of successful strategic decision making. However, decision making in the today's dynamic and rapidly evolving world has become major challenge for organisations (Leidner and Elam 1995; Iansiti 1998). ICT has been found to strengthen the decision structure of organisations by gathering idiosyncratic information and by enhancing the capabilities of information's processing (Andersen 2001; Hedelin and Allwood 2002). Scholars have reported significant impact of information technology on the SDM process. The cost of collecting and analysing data needed for decision making is found to get reduced by the use of information technology (Greengard 1998; Clemons et al. 1993). Furthermore, it is found to enhance communication which can in turn facilitate management's involvement and participation in strategic decision making (Andersen 2001; Gallupe et al. 1992). For Brown and Ross (1996) the two importance functions of ICT with regard to strategic decision making are to facilitate cross-functional strategic decision making through sharing of information across functions and divisions and to help organisation in acting more globally (as cited in Hedelin and Allwood 2002).

A study conducted by Kumar, Selvam, Meenakshi, Kanthi, Suseela and Kumar (2007) concludes that the role of ICT in decision making has drawn different opinions – from “minor” to “vital”. The majority of responders have agreed that this role very much depends upon the nature of the problem. Several responses

indicated the importance of both the ICT-supported information sources and analytical tools. Other responses worth noting here are:

- ICT helps reducing uncertainty;
- ICT can transform decision data volumes into manageable levels;
- ICT has a potential to boost confidence and insure from fatal decision mistakes;
- The rigid structure of IS in operation is a counterproductive factor in providing decision support;
- ICT is vital, but can hurt even more than help.

Communication of problem and decision through ICT application is an important area of research on the impact of ICT on SDM. Andersen (2001) conducted a study on the effect of information technology for the purpose of enhancing organisation communication capabilities – both internal and external. He conducted the survey of 360 sales executives representing the business entities of two distinct industrial groups: one representing more dynamic and complex environment and the second representing less dynamic and complex environment. The findings produced by his study showed that the complexity and dynamism of the environment has strong association with the impact of information technology – in less dynamic environment the use of information technology for internal communication (intranet) is found to have positive association with innovation whereas in high dynamic environment the use of intranet combined with autonomous decision making have positive association with organisation profitability (or productivity where applicable) and sales growth. Similarly, in less complex and dynamic environment, use of information technology to enhance external communication (internet) is found to improve profitability and innovation when combined with participatory decision making whereas in highly complex and dynamic environment, same combination is found to improve innovation only.

The implementation of ICT application has been reported to effect SDM performance in the past (Davis 1984; Huber 1990; Molloy and Schwenk 1995). Molloy and Schwenk (1995) conducted a multiple case study on the organisations where ICT applications have been implemented. Though they use the term “use of information technology”, they did not examine the extent to which the implemented technologies were being used by the managers of these companies and their findings was limited to the implementation of information systems instead of their actual use. They found that these computer assisted information processing and communication technology enhance identification of rapid and accurate identification of problems and the use of ICT application for information storage improve accurate, comprehensive and timely availability of information during strategic decision making. However, the use of ICT application can only enhance the speed of decision making process and can produce no impact on the quality of the decisions.

Instead, the quality of decision making in an organisations – i.e. its comprehensiveness – determines the rationality of the integration of an information system for strategic planning. Segars, Grover and Teng (1998) developed a framework for rational adaptation of strategic planning information system. In the framework they include a number of factors that can lead to the development of a formalised and

structured system of strategic planning. One such factor was the comprehensiveness of strategic decision making. They held that the more comprehensive strategic decisions are the more structured will be the strategic planning system. Despite the positive impact of this comprehensiveness on strategic planning, there are certain issues associated with it. Smith et al. (1988) found that comprehensive decision making requires more and frequent involvement of decision makers with the bottom-level actives. In addition, such decision making is not possible without the timely access of reliable and up-to-date information. Keeping these factors in mind, they argued that information processing systems ought to be used in the organisations where decision making is more comprehensive than its competitors.

In addition to the implementation of ICT applications in the organisations for strategic decision making, it is also important to examine the actual use of these applications by the strategic decision makers. Though Jarvenpaa and Ives (1991) claimed that use of ICT application is not as important as their acceptance of the use of ICT applications in a firm, Liender and Elam (1995) found that the frequency and the length of the use of decision supported technology by top management can speed up the process of problem identification and decision making. The frequency of the manager's use of information technology is also found to enhance perceived information availability but was found to produce no impact on the participation of the subordinates in decision making. Furthermore, because of the higher involvement of executives in strategic decision making as compared to routine decision making, the actual use of ICT application by these executives is important.

The usability of this application depends on the perception of strategic decision makers (managers and CEOs) about their functionality and effectiveness in aiding strategic decision making process (Hedelin and Allwood 2002). Previous studies reported that despite the implementation of ICT applications in the organisation, many CEOs are reluctant in using them for several reasons (King 1985; Jarvenpaa and Ives 1991). However, Hedelin and Allwood (2002) conducted the interviews of 41 strategic decision makers of different companies and found that, to a large extent, the study participants have positive views about the use of information technology in strategic decision making. This contradiction in the results can be due to the fact that studies that reported the reluctance of CEOs in ICT-use are very old and due to the increasing knowledge and use of information technology managers' fear about the use of ICT has been reduced and their knowledge of ICT application has been intensified. It is evident from the finding reported by Hedelin and Allwood (2002) that majority of the respondents were ready to integrate information technology in strategic decision making for the simplification of decision making process. However, they also found that the participants seemed less concerned about the usability of ICT applications and it appeared as if they did not often use the system themselves but had hired some persons for this purpose. Because there were no clear evidence of the non-usability of ICT applications by the decision makers and Hedelin and Allwood (2002) only assumed this from their results, the subject is still unclear and requires further investigation (Fletcher 1999).

Some important factors, identified in the previous studies to influence the usability of ICT application in organisations include perceptions of the management about the usability and applicability of the ICT-application, perceived ease in the use of application, and the use of same ICT-application by competitor organisations (Zain et al. 2005). Among these factors, competition has been shown as an important factor because of its double influence on the acceptance of ICT-application in business firms. On one side, in the highly competitive business environment, the frequency of introduction of new services and products is much higher (Garten 1998). Thus with the rise in competition, firms stated to think of new ways to gain competitive advantage over other firms. In the present scenario, adoption of technology is the first possible strategy adopted by the firms in highly competitive environment (Patterson et al. 2003).

On the other hand, adoption of new technology by any firm increases the pressure on its competitors to adopt the same or better technology (Cheng and Yeh 2011). Keeping in view the positive impact of compaction on ICT-integration, the study assumes that competition can serve as an important covariate in the relationship between ICT and strategic planning. It is also important to give considerations to the requirements and needs of each selected industry and the interaction between ICT and strategic decision making in the firms of these respective industries.

3 Business Environment in the Republic of Macedonia

The Republic of Macedonia is a small landlocked country in the South-eastern Europe, having population of about 2.06 million (IMF 2010). In the initial days after independence, the country faced serious problems in economic growth due to absence of infrastructure, UN Sanctions and economic embargo from Greece (EuCommerz n.d.). However, the country's economy is now growing as evident by the growing GDP and improvement in business infrastructure due to the considerable economic reforms in past decade (World Bank 2011). According to International Monetary Fund's (IMF) estimates, the GDP of the country in 2010 was 9,580 billion USD (IMF 2010) with GDP Growth of 1.201 % (Economy Watch 2011a). Nevertheless, if we compare it with the 1.762 % growth of GDP in EU (Economy Watch 2011b), there is room for further improvements in the economy. GDP growth in Macedonia during 2001–2010 is presented in Fig. 3.

The continual GDP up to 2007 is attributed to the privatization policy of the government and the investment from international community (Dauti and Pollozhani 2008), with its peak achieved in 2007. However, in 2009 one can notice negative growth of GDP which might be attributed to global economic crisis. The country is also seeing a continual increase in the GDP per capita representing improving living standard of Macedonian public. The country is striving to reach the standard needed for EU membership but there is still much room for improvement (Dauti and Bodo 2009). Despite all economic progress the

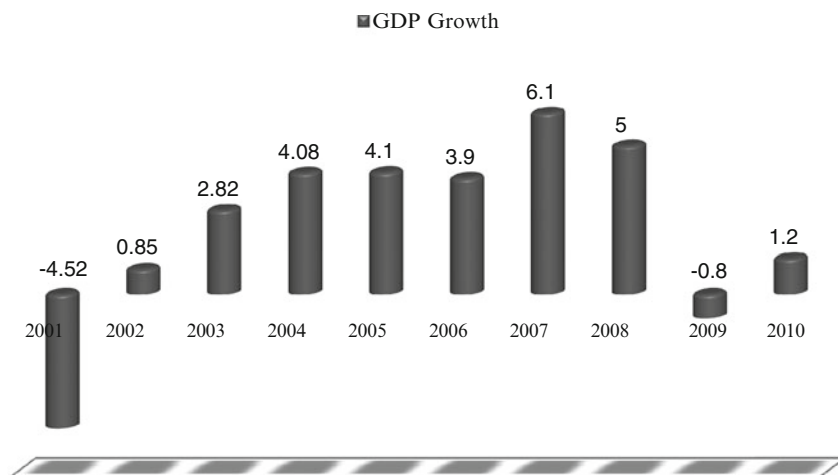


Fig. 3 GDP growth in Macedonia during 2001–2010 (Source: EconomyWatch 2011)

unemployment rate is still high in the county (Dauti and Bodo 2009). In addition, the raising trend of current account deficit and external debt is a big problem which raises the concern about long term sustainability of current account deficit (Unevaska and Jovanovic 2010).

There are some cultural problems with the country industrial growth as well. Evans (2009) pointed out a number of problems in the Macedonian business culture. First, Macedonian citizens give little importance to time and late deliveries, unscheduled business meetings, and unnecessary delays in business transactions are common in the country. Second, nepotism is quite common in the country and personal relations are usually given precedence over the work quality. Third, customer satisfaction is not the main concern of organisations in Macedonia and finally and very importantly, there is lack of initiative for improving business performance. As a result, innovation and entrepreneurship are the least spoken words in the organisations. However, he noted that the environment is slowly changing and the new generation is more innovative and enthusiastic (Evans 2009).

The main transition seen by the country in past few years is in the economic structure from monopolistic to free market economy. It is among the top economies making biggest effort in creating a regulatory environment (Doing Business 2012). A number of new legislations have been promulgated for liberalization of economy and several state-owned enterprises have been privatised. However, this liberalization of economy is causing several problems for the country particularly its impact on the inflation rate (Karatnycky et al. 2001). The impact of this liberalization on organisational culture and performance is also a matter of debate (Apostolov 2010).

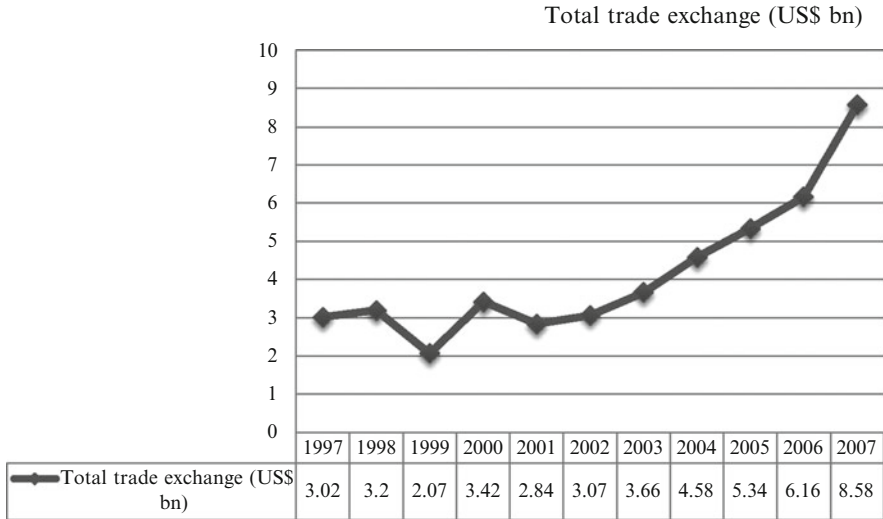


Fig. 4 Total trade exchange in RM 1997–2007 (Source: Petkov and Mojososka 2008)

3.1 Trade Sector in Macedonian Business

According to Petkov and Mojososka (2008) report there is positive trend in the trade sector of Macedonia from 1997 to 2007. As shown in Fig. 4, there is continual rise in the total trade exchange of the country with a little decline in 1999 and 2001. In 2007, the amount reached at 8.58 billion USD – a remarkable rise.

As the government is committed to get membership in the European Union (EU) and NATO, it is trying its best to establish better trading relationship with European countries. In 2001 the government signed an agreement with EU which enabled the Macedonia to have duty free access to the European markets (US Department of State 2011). As a result, 56.2 % of trade in Macedonia is with EU countries particularly Germany, Greece and Italy (US Department of State 2011). Macedonia has concluded a bilateral free trade agreement with Ukraine, Turkey and European Free Trade Association. It is a member of Central European Free Trade Agreement and is also a signatory of Agreement for Promotion and Protection of Foreign Direct Investments with other important countries of the world (US Department of State 2011).

3.2 Manufacturing Sector of Macedonian Business

Manufacturing sector is an important sector of the country as it contributes about 30 % to the GDP (Global Trade n.d.). The sector suffered a lot during the economic downturn in 1991 (Parker 2007). Manufacturing sector of Macedonia is known for

the lowest average salary per employee (Risteska and Daskalovski 2008). Due to the low labour cost, manufacturing sector is the centre of attention for foreign investors (Risteska and Daskalovski 2008). However, the flow of foreign direct investment differs among industries and countries of origin (Bitzenis et al. 2007).

Steel and Textile industries are the main manufacturing sectors in the country (Risteska and Daskalovski 2008; Global Trade n.d.). The steel industry of Macedonia is represented by Makstil A.D. which has initiated a new investment project in April 2007 (Duferco Makstil 2011). The industry is seeing a slow yet continual rise in production and employment (Duferco Makstil 2011; Lee 2011). On the other hand, textile manufacturing industry is the highest contributor of revenue to the economy of Macedonia (Maps of the world n.d.). However, the industry is suffering a lot due to the high competition in this industry (Evans 2009).

3.3 Service Sector of Macedonian Business

Service industry comprised 47 % of the GDP in 1990s when the country got independence (Parker 2007). However due to the better policies implemented by the government and modernisation of the economy, this sector has seen a real boost in past few years. According to 2008 estimates, 61.4 % of the countries' GDP is contributed by service sector (Central Intelligence Agency 2010). The major industries in this sector are transportation, telecommunication and food services industries.

4 Integration of It in the Businesses of Republic of Macedonia

According to the Ministry of Information Society and Administration of the Republic of Macedonia, there is growing trend of internet and computer usage among Macedonian public (Ministry of Information Society and Administration 2009). The use of information technology in the enterprises has also increased and about 98 % of the large organisations and around 85 % of small and medium sized enterprises in the country have access to internet (Ministry of Information Society and Administration 2008). However, there is no information regarding the use of information technology by the top management in these enterprises. The purpose of the use of information technology in the enterprises is also unclear.

A report published by the Commission of Information Technology in the year 2005, provide some insight to the use of information technology in the business sector of Macedonia. According to the report, large organisations in the country are implementing information technology for digitalizing business process whereas small organisations have digitalised only certain function of the business process, usually finance and accounting functions (Commission for Information Technology 2005).

We now turn to the research methodology and analysis of the firm-level data gathered by the following section continues with the statistical elaboration of the data.

4.1 Research Methodology

For a study to be conducted on business industries of Macedonia and adaption of strategic management principles through technological medium, some factual information with more figurative presentation of real-world was required. For this reason, a strong philosophical inclination towards any suggested philosophies was needed; not as a formality, but as a requirement. In this regard, there were two major options (in the form of philosophical school of thought) available for the researcher to acquire.

The first option was available in the form of phenomenological school of thought. This school of thought, according to Easterby-Smith, Thorpe and Lowe (1991), asserts that the built-environment, including the entire surrounding nature, is socially assembled and subjective in its nature. From this, it is meant that science and logic is not a value-free discipline, but is being run by human interests and requirements. The phenomenological school of thought also holds that the person observing (researching) the built environment is also a part of it, and through his/her research, a focus on meaning rather than fact of studied phenomenon or event is to be made (Easterby-Smith et al. 1991). These assertions were also confirmed by Saunders et al. (2000), who confirmed that by following phenomenological school of thought, a researcher should always try to understand what is going around and should perceive each and every object with a sense of totality detection and identification. Moreover, a researcher should be keeping a focus on inducing information from available data, and sample size of research should be kept minimal, with repetitive investigations carried out over it (Easterby-Smith et al. 1991).

Second option was in the form of positivism school of thought, which offers entirely different philosophical stance for a researcher. According to Saunders, Lewis and Thornhill (2000) and Easterby-Smith, Thorpe and Lowe (1991), philosophy of positivism states that the built-environment and its surrounding environment (world) is external and objective and factual in nature, with observer not included in its domain, but lying outside of it. This satisfies that science is not driven by humanistic requirements, and perception is somewhat a neutral process in its nature. Easterby-Smith, Thorpe and Lowe (1991) further included that a researcher should be focusing of factual information rather than meanings of the phenomenon, and should be looking for actual causes behind fundamental laws. Through this philosophical stance, a researcher reduces any phenomenon, any activity, to simple facts and designs a hypothesis for testing it. As evident, this philosophical stance is in opposition to the phenomenological school of thought,

and therefore, results obtained through it should be representing reality in numerical format (Saunders et al. 2000).

After a considerable amount of consultation, this research was carried out under the domain of positivism, with an assumption that this step will make it a more factual study, rather than subjective. Moreover, positivism stance was acquired also because sample size which was pre-assumed to be taken was larger for phenomenological research, and data obtained through them was likely to be of measurable nature. Fortunately, this decision remained fruitful, as positivism approach helped this study to gain a lot of useful information, which was to be (supposedly) missed by phenomenological stance of research.

4.1.1 Sample Size

Overall 45 managers of large firms were surveyed out of three industries. Specifically, from each industry, 15 firms/managers were surveyed. The selection was made according to their knowledge on the industry, and the idea of why and how technology should be implemented to serve strategic decision making process.

4.1.2 Instrument

Particularly stating about survey researches, Saunders, Lewis and Thornhill (2000) and Easterby-Smith, Thorpe and Lowe (1991) agree that survey based researches usually begin with the assessment of the research instrument designed. This assessment is targeted towards getting an idea about the efficiency level of the research instrument i.e. is research instrument completely fulfilling the requirement of study by getting the required data or not. Usually, it is done by making a pre-research application of questionnaire (pilot survey) through getting some feedback from random people. Although, it is not a necessity, but taken as a good practice in formal researches. For this reason, this study also applied its instrument in a post primary research condition, and made its application after getting verified and satisfied.

Instrument used in this research was a self designed survey questionnaire intended to take participant feedback on the issue of study. This questionnaire contained eight sections, targeting distinct general and professional aspects of the participants:

- First section, section A, required control information (name, city, industry, address, etc.) to be added by the specific participants.
- Section B was named 'General Information' and consequently it asked about the position, gender, age, and education of the participant. In this manner, all the personal information of the participants is taken with the help of first two sections. However, this personal information was not used as selection criteria but was used to expelling the demographics of respondents of the present study.

- Section C was about getting the information regarding competition in the specific industry of participant. It asked about the number of competitors of the specific industry penetrating in the market and their business origin (i.e. domestic or foreign). Moreover, this section contained a question targeting the efficiency of participant's specific industry in overall Macedonian business environment, and asked the participant to evaluate the industry's performance on a scale of 1–5 (with 1 being highly competitive and 5 as not competitive).
- Section D was named 'Information Communication Technology'. First question required participant to reflect the frequency of communication technology (i.e. e-mail, IM, etc.) usage by managers to interact with in and outside the organization, usage of computer networks for communication, and technical information transfer to/from managers via electronic communication sessions (with 1 being all the time and 5 as never). Similarly, second question required participant to mention the application of internet in the organization (by managers) for obtaining work related information or for interaction with clients, partners, etc. (with 1 being all the time and 5 as never). Last question of section D was about the use of information systems (like CRM, ERP, etc.) in the organization.
- Section E was about strategic planning of the participant's particular organization in the specific industry of operations. This section remained a vital constituent in the survey questionnaire as it was directly targeting the issue of research. It contained five questions regarding emphasis of organization on the development of mission statement, on business planning, on annual goals meeting, short term actions and plans, and meeting of strategic objectives respectively. These questions were also scaled according to numerical Figs. 1, 2, 3, 4, and 5, with 1 being no emphasis and 5 as very strong emphasis.
- Section F was targeting a more important and specific issue i.e. use of technology in strategic decision making process. It involved six questions in the first part, asking participant to reflect how technology can be used in this pursuit, what efficiency will be brought by using IT in SDM, what is the current effectiveness level of MIS in the organization, what should be the extent of integrating technology in SDM, and what benefits shall be obtained in this regard. Scaling was done with 1 = always to 5 = never. In its second part, section F simply required participant to mark the ideal percentage of shareholders' involvement in organization's ordinary and strategic decision making sessions.
- Section G was regarding the management structure and hierarchy operating in the participant's organization. Exactly four questions related to the presence of board of directors and supervisory board, their specific count, and influence on company policies and decisions, were added in this section.

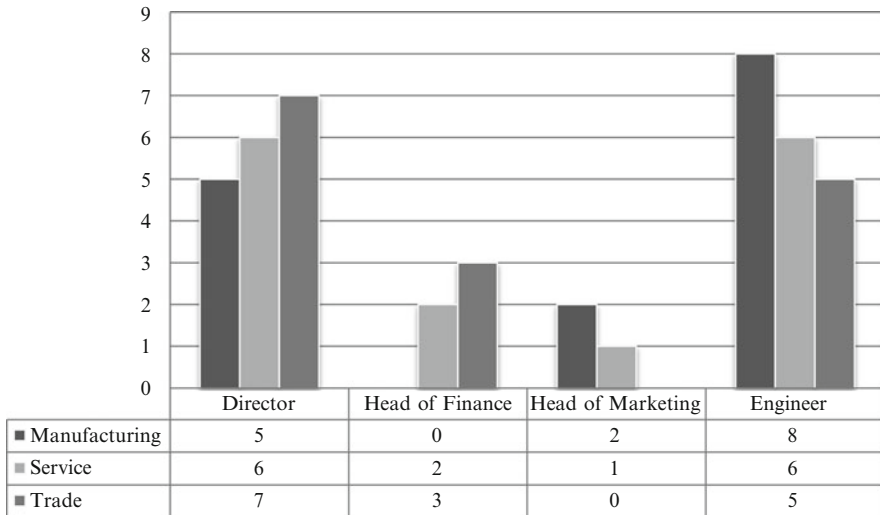


Fig. 5 Respondent’s position (Source: Own Research)

5 Comparison of Three Industries

As provided above, professionals working in three industries of Macedonia were selected for the survey. Fifteen respondents were taken from the different firms of each industry, making a total of 45 study respondents. These respondents were the professionals serving these firms at different management positions. The researcher wanted to include those professionals in the study who were serving in a position with decision making power so that they can provide correct information about the role of ICT in strategic decision making. Figure 5 shows the graphical comparison of the distribution of the sample of each industry with respect to respondent’s position.

As shown above, in the sample of trade industries, majority were working at the position of directors and strategic decision making as part of their job responsibilities. They are adequate number of directors and engineers in the sample of manufacturing, service and trade industry as well.

Head of finance is responsible for financial decisions of the firm and it is an important position with respect to strategic decision making, again trade being the highest. The above graph also shows that the sample of the manufacturing industry has slightly less director respondent position in comparison to trade and service sector, but more in head of marketing.

With respect to education, as shown in the Fig. 6, all industries have educated general managers. In only one firm of manufacturing industry, one firm of service industry and three firms of trade industry, the general manager were reported to be educated with high school level.

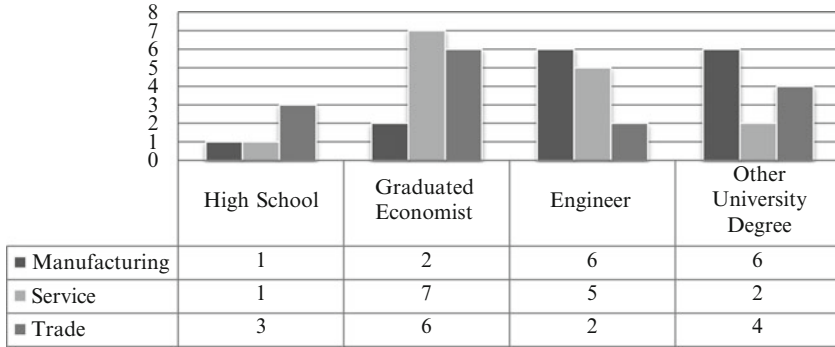


Fig. 6 Respondent’s education (Source: Own Research)

Since the General Managers of most firms have professional degrees, their education can aid them a lot in planning and management of better strategic decision. All the findings presented above are important for understanding the context of the main findings presented in the following paragraphs. It provides knowledge about the firms and the industries from which respondents have been selected for this study and can assist in better interpretation of the strategic decision making trends and use of ICT in these firms.

The researcher inquired the respondents about the number of competitors and level of competition in the firm to examine the competition situation in each industry as well as to find the impact of level of competition on the integration of ICT in strategic decision making. Figure 7 compares the average of the two variables for the three industries.

As shown above, there is little difference in the competition structure of the three industries. The average number of competitors for the firms of manufacturing industry is 4.6 and for firms of trade industry are 4.5. For the firms of Service industry the average number of competitors is relatively lesser (3.9) but the level of competition, as perceived by the professionals working in the firms, is higher than that of other two industries.

The use of IT in the firms was benchmarked with the help of calculating the use of ICT, Internet and IS in the firms for different purposes. The obtained results are shown in the Fig. 8 With regard to the use of ICT in three respective industries the researcher found that manufacturing industry is better than the other two industries, as evident from Fig. 8 In the firms of manufacturing industry, the use of ICT is far more than the use of ICT in firms of other two industries. Similarly, the firms of manufacturing industry also use internet more than the firms of service and trading industry. However, the importance and use of IS in the manufacturing industry is not very much. In fact, the firms of manufacturing industry are the least user of IS amongst the three selected industries.

There were five questions for calculating Strategic Planning – each asking the level of emphasis paid by the firm’s management to the important ingredient of strategic planning. The respondents were asked to provide answers to these

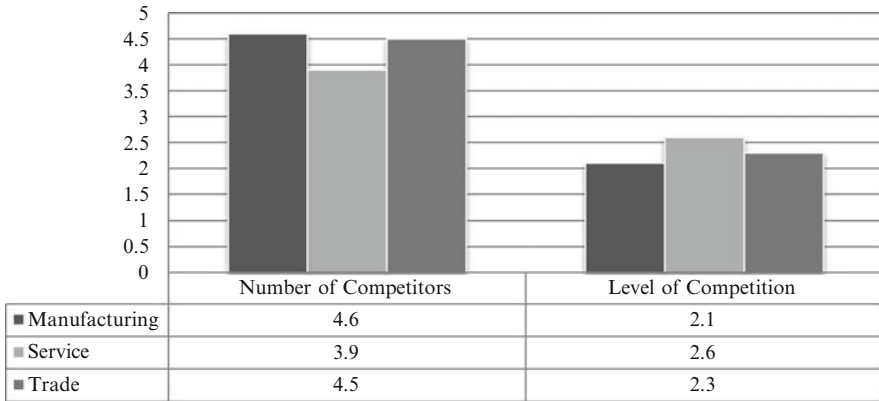


Fig. 7 The number of competitors and level of competition in the firm (Source: Own Research)

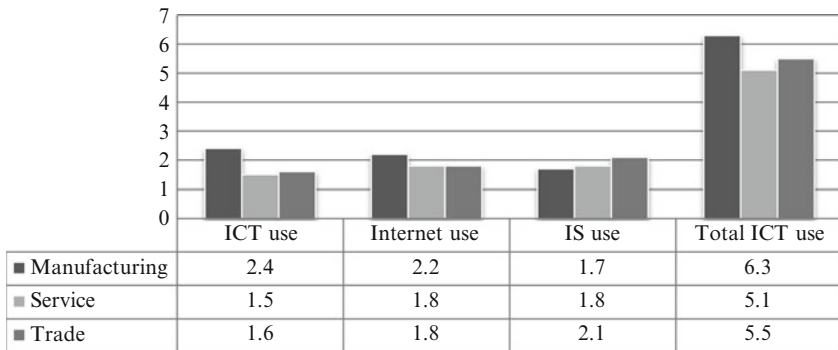


Fig. 8 Use of IT in the firms (Source: Own Research)

questions through rating them from 1 to 5, where 1 refers to no emphasis and 5 to very strong emphasis. Figure 9 shows the graph obtained by plotting the average score of the firms to each important element of strategic planning.

In the firms of service industry, strong emphasis is paid to the development of mission statement followed by trade and manufacturing industry where emphasis is a bit lower, but not weak. In terms of long-term planning, as well, service industry has more emphasis than the other two industries. All three industries have same degree of emphasis on annual goals and almost same degree of emphasis on short-term planning. However, with respect to the evaluation of strategic objectives, firms of trade industry have strongest emphasis followed by service and manufacturing industry.

Apart from strategic planning, the researcher also took into account the relationship between ICT and strategic decision making in the company. The researcher asked the participants to tell the frequency with which ICT is being used in the company with the aim of facilitating strategic decision making and the extent to

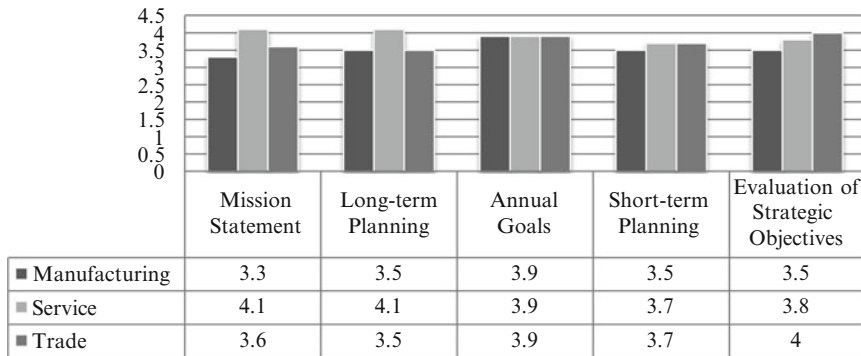


Fig. 9 Firms’ emphasis on strategic planning (Source: Own Research)

which this integration of ICT in the strategic decision making improve the efficiency of the firm.

As it shown in Fig. 10., in the firms of trade industry, the integration of ICT in the strategic decision making was reported by its workers as highest (2.4) as compared to the integration of ICT in strategic decision making in the firms of manufacturing (2.0) and service industry (1.9). However, taken together the integration of ICT in the strategic decision in all three firms is not very satisfactory and there is need to give importance to the integration of IT in the firms for this important function.

When the respondents were asked about the presence of the board of director and supervisor board in their firm, most of them replied in affirmation. In manufacturing industry, 8 out of 15 claimed to have a board of director in their firm and 6 out of 15 replied positive to the question on the presence of supervisor board in the firm. In the 15 firms of service industry 9 had board of directors and 13 had supervisor board. By contrast, in the firms of trade industry the management is somewhat less central as only seven had board of directors and five have supervisor board. This presence of managerial boards in the firms can provide a good insight into the hierarchical structure of the firms in respective industries (Fig. 11).

6 Conclusion

The chapter provides critical review of the recent literature on strategic management and the use of information communication technologies, with specific emphasis on decision making. The importance of strategic decisions at different hierarchal level and for different purposes has been provided. Nowadays we have an increasing trend of moving away from the traditional approach of managing companies and concentrating more on IT which is becoming an essential part for the future of the companies. Previous studies reported the importance of timely access to reliable information for strategic decision making and highlighted the role played by ICT in

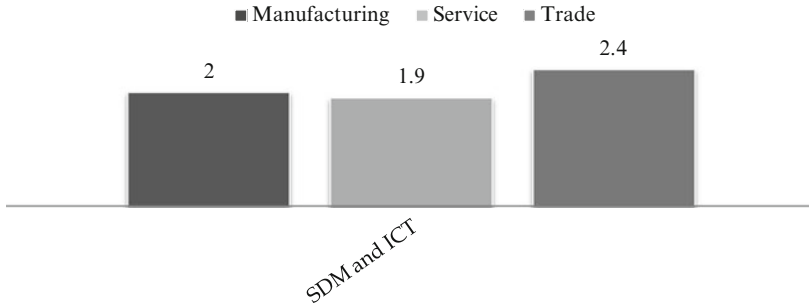


Fig. 10 Integration of ICT in strategic decision making (SDM) (Source: Own Research)

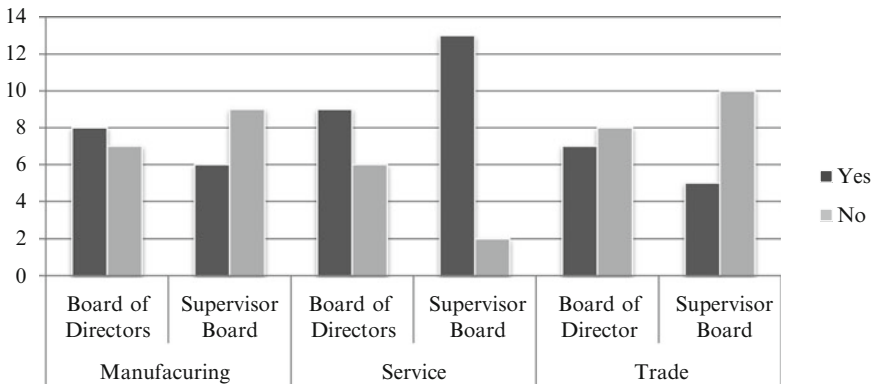


Fig. 11 Presence of managerial boards in the firms in decision making process (Source: Own Research)

this regard. The literature also pointed out the need to look at the usability of ICT application by the decision makers to understand the actual use of information technology in strategic decision making.

In this chapter the respective markets of Macedonia and their business environment, along with the current enhancements and requirements of integrating IT business enterprises of the country to help in strategic decision making process are also discussed. It was found that there is lack of literature on the strategic management in business enterprises of Macedonia. The use of information technology for strategic management in the respective enterprises of Macedonia is also an untouched subject and is in critical need of research.

Statistical and graphical analysis of the survey responses produced a number of important findings with regard to the information technology induction in the Macedonian firms of three selected industries. The study compared the firms of the three industries in terms of a number of factors. In all three industries, the proportion of female decision makers was lesser than the proportion of male decision makers. There was little difference in the three industries in terms of the

age and education levels of their general managers'. Most of the managers in the firms of these three industries had ages between 30 and 50 years and had professional degrees in economy, engineering or other related disciplines. The level of competition was also much similar in all of these firms.

In terms of the use of information technology applications, manufacturing industry is better than the other two industries with the exception of the use of IS where the firms of service and trading industries are better than the manufacturing ones (See Fig. 4, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)"). In terms of strategic planning, firms of service industry scored better than the others in formulating a mission statement and having long-term planning (See Fig. 5, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)"). However, all firms reported to give equal importance to annual goals and there are also slight differences in the short-term planning carried out in these firms (See Fig. 5, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)"). With respect to the evaluation of strategic objectives, firms of manufacturing industry have strongest emphasis followed by service and trade industry (See Fig. 5, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)"). Firms of trade industry were also found to have better induction of information technology in their strategic planning (See Fig. 6, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)"). The firms of the three industries also differ in the presence of the managerial boards (See Fig. 7, chapter "[Growth Strategies of Entrepreneurial Businesses: Evidence from Macedonia](#)").

The study concludes that it is the right time for the management of firms in Macedonia to recognise that the integration of information technology cannot make the organisations successful than their competitors unless information technology is linked with the strategic planning of the firms. A number of firm-level studies have been carried out in the past few years, taking advantage of cross-firm/country variation in performance and in perceived or actual severity of business environment constraints. These studies represent an important advance over the ones based on more aggregate data and also the ones that employ comparative analysis between economies provide recommendations from those that are performing better.

The recommendation for the management of the selected firms and for other firms in Macedonia is to improve the level of their integration of information technology, however, these firms are cautioned that the integration of information technology is not the only success factor and there are certain important factors that need to be given consideration while integrating information technology in a business firm. One such factor, identified in the present study, is the integration of information technology as a strategic plan to gain competitive advantage. The finding of the present study suggests several courses of action for the government of Macedonia as well. It is highly recommended to the government of Macedonia to increase the level of competition in the three industries, as competition is important for adopting the free market economy system.

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