Preface

“Perspectives and Techniques for Improving Information Technology Project Management” belongs to Advances in Information Technology Project Management Series book project. There are five sections and 18 chapters in this book.

SECTION 1: PROJECT PROCESSES AND METHODOLOGIES

Section one consists of two chapters. In Chapter 1, Stefan Koch and Gerhard Turk solve the “Human Resource Related Problems in Agile and Traditional Software Project Process Models.” The authors approach software development from a human factors perspective. Unfortunately, human resource management or employee satisfaction has not been a major issue in this context, so any work on this issue is very important, as there can be major impacts on quality of the final product, and on efficiency and effectiveness of work. The main question explored is whether types of process models in software development show some relationship to employee satisfaction or components therefore. Basically, the authors differentiate between more consecutive, waterfall-based models and more prototyping, spiral-oriented approaches, especially agile approaches like Scrum or XP. Based on a series of interviews with 15 randomly selected software developing companies in Austria, the models adopted and any human resource related problems are explored.

The results are quite interesting and sometimes surprising: The authors found that agile-oriented models are not necessarily limited to small projects, but that both groups showed nearly identical distributions for team size and duration. Interestingly, rigid-type models tend to exhibit higher effort estimations, and lower correctness in these estimations. Also customer satisfaction is slightly lower. With regard to human resource issues, the differences are not major overall, but there are some noticeable exceptions: In general, satisfaction and acceptance are higher at lower stress and overtime levels for agile-type project participants, but, interestingly and contrary to theory, people wish for more responsibility. Agile-type projects also seem to enjoy some advantages in information sharing and communication, and in some quality aspects. On the other hand, rigid-type projects show considerable higher abilities to cope with absence of personnel. The implications of this for project management are that both models have advantages and disadvantages, but neither is very pronounced. A good fit for a company and team would therefore enable to reap benefits from both ideas, and to withhold any major. A conscious decision of team leadership has to be made to choose the correct balance, and this chapter argues correctly to take human resource related effects into consideration while doing so, in addition to other factors like cost or schedule.
Shai Rozenes tests “The Impact of Project Management Methodologies on Project Performance” in Chapter 2. The project management domain includes many well-defined methodologies such as Project Management Body of Knowledge (PMBoK) that was develop by the Project Management Institute (PMI), or Association for Project Management Body of Knowledge (APMBoK) that was develop by the Association for Project Management (APM). These methodologies represent a structured approach which presents a set of standard terminology and guidelines for project management. Both are process-based, meaning it describes work as being accomplished by processes. This approach is consistent with other management standards such as ISO 9000. There are more than 600,000 PMI members and 19,500 individual and 500 corporate members in the APM. These numbers represent a word wide understanding that such methodologies are the appropriate way for coping with the management of a project. On the other hand, project failures rate is quite. Thus, an interesting research question is: does using these methods improve project performances? Furthermore, do well-known methodologies can support project management? This study is a novel research that challenges the basic assumption of the entire project management domain the only structured managerial methodologies can lead to success.

The study was planned and performed to investigate the added value of using a project management methodology versus an intuitive managing approach. This research was focused on the learning process of engineering project management. The focus was on the impact of implementation of a predefined project management methodology. The study included a single-session experiment with four identical simulation runs of simple project (SP) and four simulation runs of a more complicated scenario (CP). The study was performed within two groups of students with basic managerial know-how but without any structured project management knowledge. The control group performed the simulation without learning the structured project management knowledge and the experimental group performed the simulation after learning the structured project management knowledge. The variables studied were within most important project dimensions: project duration (i.e., project makespan) and project profit. The results show that in comparing the experimental group and the control group, the experimental group achieved significantly higher profit and shorter makespan. The results indicates that using a systematic project management methodology improve the performances of project managers. Therefore, the well-defined project management methodologies were proven to be supportive in order to strive toward project aims and objectives.

SECTION 2: MEASURING PERFORMANCE

Section two consists of four chapters. Muhammed A. Badamas provides “Information Technology Project Outcomes: An Exploratory Study of Project Managers’ Viewpoints” in Chapter 3. The study is a survey of IT project managers working in the Washington-Baltimore metropolitan area, which is a major hub of IT activities. The survey solicited their views as to why project fail or succeed, and attempts to determine how project managers attribute IT Project success and failure. A major stakeholder in every IT project is the IT project managers. The goal of this research is to find out the main factors of IT projects success and failure from the point of view of project managers. A sample of the IT project managers was selected because, combined with a standardized questionnaire, the sample offered the possibility of making refined descriptive assertions about a group in the population. The underlying theory of project management was evaluated through four sources of evidence: (1) the plausibility and consistency of the theory in itself; (2) empirical validity; (3) competing theories; and (4) alternative methods based on
competing theories. Competing theories and the empirical evidence reveal the hidden assumptions of the underlying theory of project management.

Fourteen possible reasons for success and fourteen possible reasons that can cause failure of a project were identified and listed. The respondents were requested to rank these reasons. The higher the mean of a reason the more important is the reason to IT project managers. The lower the mean of a reason, the least important is the reason to the IT project managers. The standard deviations indicate the variability of the means - the higher the standard deviation of a reason, the lower the level of agreement among the respondents on the reason. The project managers cut across the spectrum of those working for organizations (58=77.33%), those working for consultancy firms (12=16.00%) and those working as independent consultants (5=6.67%). The organizations for which the respondents worked are divided into small with less than 100 employees, medium with between 100 and 1000 employees and large with over 1000.

Out of the seven leading reasons for a success of a project, the IT project manager is responsible for six. While the other factors might not be the responsibilities of the project manager, he must be in a position to influence the stakeholders over those factors. Of the leading six reasons for failure, the IT project manager is responsible for five of them. Project managers carry the responsibilities for getting the jobs done with the available resources, and in time.

In Chapter 4, Mary R. Lind and Evetta Culler evaluate “Information Technology Project Performance: The Impact of Critical Success Factors.” The authors showed that project management best practices increase information technology project success. While this study found that organizational size did not impact organizational success they did find that Pinto’s 1986 critical success factors were the key predictors of project success. A large number of project managers in different firms were surveyed resulting in 116 usable responses. Participants were predominantly (47%) technical project team members. The Project Implementation Profile of Pinto determined the predictor variables which were the critical success factors: client acceptance, client consultation, communications, monitoring and feedback, personnel, project mission, project schedule or plan, appropriate technology, top management support, and adequate contingency plans. The moderating variables were organization size and project size.

The current research data supported associations between the critical success factors and information technology project performance even when there were controls for project and organizational size. Project demographics have an effect on associations between the critical success factors and project performance. Project size is a surrogate for project complexity as information technology projects involve more people and take longer to accomplish as their complexity increase. Organizational size is a surrogate for lack of embeddedness where in larger organizations it is harder for the project teams to be in touch with their intellectual capital in managing information technology projects. Project performance was higher when the project is a smaller sized project, when the goals of the project are clear, when needed technology is available, and when there are higher client acceptance scores. When project success was measured with a simple response of successful or unsuccessful, a successful project was related to higher scores for client acceptance and higher scores for trouble shooting. Communication was supported as being associated with information technology project performance.

The results indicated the highest association with information technology project performance was availability of the needed technology. The over reliance on technical team members may have affected the current study results. A future study excluding technical project team members might support or fail to support the possible bias introduced by the inherent sample characteristics in this research study. This study also collected multiple measures of project success. The examination of the data analysis showed the size of the project, clarity of goals and mission, availability of required technology, and
client acceptance of the project had a significant impact on project performance. This study affirms the applicability of the Pinto research in information system project management.

Markus Ilg and Alexander Baumeister assess “Performance Management in Software Engineering” in Chapter 5. Performance Management in software engineering is difficult, amongst other things because it is hard to estimate the efforts needed to develop a complex software system. Budget overruns confirm this issue quite often. An important improvement to be addressed is therefore to enhance the budgeting process for software projects. The authors concentrate in their chapter on software projects developed using the Rational Unified Process (RUP). This is due to a surprising structural similarity between the concepts of the RUP and the concepts used in activity based costing, which allows the usage of well-known techniques in management accounting to accomplish the software calculation task.

The calculation method is discussed in short only, because its fundamental principles have been developed by the authors in 2004. Instead of that, the chapter discusses some advanced problems and proposes innovative solutions to these. One of the problems discussed is the identification of appropriate iteration types. Iterations are an important element of RUP-based software projects and can be characterized as small and time-boxed software projects of their own. Baumeister and Ilg developed an iteration signature that allows a numeric description of any iteration. Additionally they show an easy method to measure similarities between iteration types. Furthermore they provide means to handle non-linear cost behavior, which can found regularly with intensity dependent cost functions. Frequently ignored but of great importance is the consideration of opportunity costs – or to be more explicit – to account for time; Baumeister and Ilg therefore calculate net present values for software projects by means of integrating life cycle costing concepts.

The improvements in calculating target costs have to be accompanied by advancements in the analysis of variations for projects not meeting their goals. This is of key importance for project managers whose financial incentives are based on the adherence of a cost target. The more parameters that are considered in calculating the cost target, the more complicated the cost analysis will become. All partial variances that can be identified have to be questioned regarding the responsibility of the project manager. For instance, variances caused by external circumstances have to be extracted (labor costs are in some cases an example). The same is true for a modified quantity structure of software projects, which can be ascribed to changed business requirements by the customer. The authors provide interesting insights into the manifold problems concerning the calculation of software developments. This article has received IGI Global’s 2010 best paper award.

Adrián Hernández-López et al. explore “Software Engineering Productivity: Concepts, Issues, and Challenges” in Chapter 6. The authors sum up the concept of productivity from the point of view of software engineering. The concept has been in constant update since its first appearance in the late years of 18th century, and its further development and explosion in the 20th Century for manufacturing industries. Within software engineering, the concept of productivity is strongly related to the study of project planning and estimation and the required effort and cost of software projects. Then, commonly used productivity measures are focused on the project level of measurement, i.e. productivity of software engineering projects. In this direction, the most commonly used measures are Function Points per unit of effort/time, or Source Lines of Code per unit of effort/time which is decreasingly used. These commonly used measures focus on the software delivery productivity using a size measure for the output produced.

Nevertheless, other level of measurement may be considered (e.g. team or individual productivity). Before creating and using productivity measures for other level of measurement, some issues need to be covered. These issues are focused on three main areas. Firstly, the authors focus on the factors that
influence productivity and its measures; secondly, the inputs that are used in the production processes; and thirdly, the outputs that are produced. In these three areas, it is required to establish units of measurement that enable the measurement productivity by combining some measures of factors, inputs and outputs together. The authors point to some items of each area that require further attention in order to continue improving productivity measures. The main challenge seems to be a change in how productivity is formulated, changing the point of view from manufacturing measures to human capital measures in consonance with the typology of tasks carried out in software engineering projects. Once the inputs, outputs, and factors influencing productivity measurement are defined, a formulation of new measures can be established.

So, many issues and problems remain unsolved within software engineering productivity and further attention from the research community is needed. Moreover, the constant changes in how software engineering projects are carried out, add extra difficulty to establish and use productivity measures. In order to create a start point for further research the authors firstly introduce the concept of productivity and related concepts, secondly they present some issues, thirdly they state some challenges, and finally they establish some conclusions.

SECTION 3: OUTSOURCING AND OFFSHORING PROJECT WORK

Section three has three chapters. In Chapter 7, Mark Leeney et al. investigate “Information Systems Outsourcing in Large Companies: Evidences from 20 Ireland Companies.” The authors present in this chapter the results of a survey carried out to characterize information systems outsourcing practices of large companies in the Republic of Ireland, identifying the range of services that are most often outsourced. The set of information services contracted to outside suppliers, originally more limited to services of an operational nature, has expanded over the past two decades, and today there is a wide range of services subject to outsourcing. Among them are: maintenance of applications; integration of systems; services and communications networks; security management; fault tolerance and data recovery; Web design and development; Web hosting; Web services; e-mail and messaging services; data center; IT professional consulting services; help desk; user and IT staff training; project management; software development; and many others. Depending on the nature of the services contracted and on the range that the contracting of services has on departments of information systems, the issues involved in management vary considerably.

On average, departments of information systems of large Irish companies outsource to external suppliers approximately 41% of its needs for services of information systems, which is in line with the reality of companies from other countries. The development of software applications, along with the maintenance of applications, has traditionally been part of the more popular range of services outsourced due to the pressure of reducing IT operating costs and the desire to have internal IT focused more heavily on strategic tasks. Through the results obtained in the study it is possible to verify that large Irish companies do not diverge from this. The presented results are relevant in the sense that not only do they enable a better understanding of the reality of information systems departments of large Irish companies, but also enable the management to focus attention on specific services, like project management. The transfer of part of organizational services of information systems to an external entity does not remove the responsibility of managing the department of information systems, being the maintenance of an internal team with strong leadership a critical success factor for information systems outsourcing.
Peter Haried focuses on “Stakeholder Challenges in Information Systems Project Offshoring: Client and Vendor Perspectives” in Chapter 8. Stakeholder management is an under-emphasized and critical skillset necessary for successful project management. The ability to effectively manage diverse project stakeholder interests has emerged as a critical skill for project managers to position information system (IS) offshore projects for success. In his research the author identifies that various challenges faced in achieving success from an organizational standpoint may stem from the fact that many levels and types of stakeholders are involved within the project sourcing relationship, with each group having their own success interpretations. Thus, he suggests that when evaluating IS offshoring one must remember that success is often in the eye of the beholder and that all perspectives (client vs. vendor and managerial vs. operational) should be included to fully capture the project relationship.

In the area of project management, it is widely acknowledged that an understanding of the factors contributing to the success and failure of IS sourcing projects has been a challenging and enduring goal. Despite over a decade of research into offshore IS project sourcing; a consistent model to explain the factors contributing to project management success and/or failure is elusive. This research takes a unique perspective by presenting both sides of the project management relationship (client & vendor) and thus makes a valuable contribution by identifying many potential stakeholder challenges. If the identified challenges are addressed, project managers may be in an improved position for achieving successful outcomes. His findings should not be overlooked by current and future offshore IS project managers.

His research does an excellent job in bridging the client-vendor perspective gap by highlighting challenges faced by both client and vendor stakeholders. His work clearly demonstrates the value in understanding both sides of the offshore IS project sourcing story. Overall, his research offers an intriguing collection of key stakeholder challenges uncovered from his intense client and vendor case discussions. Interviews were conducted with over 50 stakeholders at different levels and functions within both client and vendor firms across eight dyadic IS offshoring projects. The author commendably introduces the audience to the detailed client and vendor first hand offshore project management experiences. His findings are definitely thought provoking. One of the main contributions of this research are the nine noteworthy project management challenges faced by client and vendor stakeholders that can lead to project management success or failure. The challenges identified include a wide assortment of economic, personal responsibilities/expectations, and organizational offshore project management issues. As a result, the author’s findings and reported challenges can suitably guide client and vendor project managers in their plans to position offshore IS projects for success as well as guide academic researchers to include both stakeholder perspectives when evaluating IS project management practices.

Hajer Kefi, Alya Mlaiki, and Richard L. Peterson introduce “IT Offshoring: Trust Views from Client and Vendor Perspectives” in Chapter 9. In a highly globalized economic context, one of the most challenging aspects of IT projects management is to handle the multicultural issues which are part of externalized, international and cross boarders business processes involving IT. This is the case for IT offshoring projects management where it is important to settle stable and durable partnerships within complex sets of actors: vendors, clients, offshore units, etc. In this chapter, the authors argue that trust plays a crucial role in structuring and shaping these relationships. They propose to build upon the conceptualization of trust developed by Zaheer et al. (1998) and operationalized by Bekmamedova et al. (2008) in terms of inter organizational and interpersonal trust. Following McEvily et al. (2003), they have also considered trust as an organizing principle that potentially plays two types of roles: the mobilizing and the structuring roles. The integration of national culture within their theoretical framework is related to the collectivist versus individualistic specificities of the different partners (Hofstede, 1980).
Using an interpretative methodology, the authors have successfully conducted a case study in three companies established on the northern and southern shores of the Mediterranean Sea (in France and Tunisia). Their findings indicate that trust is perceived as an influencing factor on offshoring relationships when it is situated at the inter-organizational level. The interpersonal trust has not emerged as significant. The findings provide also support to the conception of trust as an organizing principle: both the structuring and the mobilizing roles of trust have clearly been identified. Trust emerges therefore as a critical centerpiece of a successful IT offshoring project. It has also been pointed out that culture plays a significant role. Indeed, this role is not perceived the same way by the offshoring partners. While cultural considerations are identified as an enabling factor in shaping and enhancing the inter-firm relationship by individuals belonging to the offshore unit (Tunisian culture), it has been considered as a constraining factor by the global vendor and the clients (European and Tunisian).

SECTION 4: CHALLENGES AND NEW PERSPECTIVE

Section four faces challenges and new perspective with three chapters. Heli Aramo-Immonen, Hannu Jaakkola, and Harri Keto show “Multicultural Software Development: The Productivity Perspective” in Chapter 10. Productivity management is a challenge for software engineering companies where the trend is toward globalization. Via acquisitions and mergers, the business has become international, and it employs different national cultures. Therefore, the understanding of cultural differences affecting productivity in globalized software production is crucial. The study of cultural effects is important because management styles vary in different cultures. The right management style has causal effects on productivity performance. The other side of the coin is that in order to approach global customer segments, companies do need to understand the cultural background of their customers. This can be facilitated by employing people from different cultures.

The relation between productivity and non-coding activities in software development projects has not been proven. Software development is expert work, typically made in closely collaborating local teams. Global distribution of expert work increases the degree of difficulty. In this section, an analysis of multicultural ICT companies from the perspective of their productivity is introduced through the lens of cultural differences. It explores the complex issue of productivity in software development work. The analytical part of this study is based on the review material of a research project (STEP) conducted by Tampere University of Technology (TUT). The collaborating partner in Finland is the University of Jyväskylä, in Estonia, Tallinn Technical University, which provides data from the Estonian software industry, and some Japanese universities (Keio University, Komazawa University, Kanagawa Institute of Technology), providing them with a local view of Asian cultures and the software industry. The project focused on studying the problems of multicultural software work and finding good practices to support software organizations in their globalization decisions. It also covered the analysis of the relevant cultures vs. software processes, service processes in multicultural organizations, and software development in multicultural organizations.

The hypotheses behind the project is that in globalization, firstly cultural differences are not well known, not even at such a level that could easily be studied using the available resources. Secondly, project productivity per se is difficult to measure or evaluate. Thirdly, human behaviour as a manifestation of the social-cultural-historical background of an individual is hard to predict. Therefore, the authors have not tried to quantify the effect of cultural differences on project productivity. Instead, the authors
have explored the domain by analysing the performance of multicultural organizations. In this study the authors introduced some findings that have a direct and indirect effect on the ability of an organization to perform productively in a global business environment.

Behnaz Gholami and San Murugesan explore “Global IT Project Management Using Web 2.0” in Chapter 11. For many businesses, effectively and efficiently managing globally distributed IT projects is a key to success in today’s competitive environment. But managing globally distributed IT projects and teams poses several unique additional challenges which can be classified into strategic, cultural, technical, knowledge management, and human resource challenges. This chapter highlights how one can harness Web 2.0 technologies and applications which have emerged into prominence in the last few years for successfully managing global projects. New generation project management tools that leverage Web 2.0 let people collaborate and share information easily in real-time and help project managers in many of their routine tasks. The effective utilization of these tools can significantly improve a project’s success. The success contribution of these new classes of project management tools are driven by factors such as: the social nature of projects, easy availability and familiarity of social networking and other Web 2.0 tools, support for both linear and nonlinear project planning and estimating time and resources, ease of learning and use, inexpensive and easy accessibility by all the team which may be distributed geographically.

In this chapter, the authors provide a comprehensive overview on project management, virtual teams, distributed projects/teams, IT projects statistics and current challenges of IT projects, and discuss in detail, with examples, how Web 2.0, such as Wikis, Blogs, Social Networks, Web Mashups, RSS feeds, and Social Tagging and Bookmarking could be used for various aspects of project management. Then authors present valuable findings of their study on awareness and level of use of Web 2.0 tools for project management among global teams, which also include why some have not been using these tools. They outline the role of Web 2.0 in each phase of IT project management and offer helpful recommendations for practitioners and project managers on effectively using Web 2.0 for successful IT project management.

Yuval Cohen, Arik Sadeh, and Ofer Zwikael concentrate on “Scheduling Large and Complex IT Projects Using Sliding-Frame Approach” in Chapter 12. This chapter presents a ground-breaking and practical approach for scheduling and planning complex software projects. In this pioneering chapter the authors introduce the sliding-frame as a project scheduling methodology, and establish a technique for its implementation. While the proposed technique can work effectively in rolling horizon environment, its main contribution is solving complex project scheduling problems from start to finish. The authors include an exceptionally lucid introduction of the fundamental elements of the sliding frame methodology: the “rails” for the sliding, the “sliding steps” and the “recycled activities.” This is followed by extremely coherent development of their implementation techniques and the illustration of the proposed implementation technique on an example project.

The proposed technique suits many complex and sophisticated software projects. Such large software projects are carried by many companies as part of their IT operations. In particular, these projects are a constant part of the operations of software companies such as Microsoft, SAP, Oracle, Google, Yahoo, IBM, and others. As a result of the size and complexity of such projects, a rolling horizon approach for their planning and management is not only plausible but also desirable. For large projects, traditional project scheduling techniques cannot provide in timely manner an optimal solution to minimum project duration under precedence and resource constraints. Interestingly, the presented rolling horizon technique can also serve, at the project outset, for planning the full horizon project in a timely manner. Indeed, this sliding frame approach is a Meta heuristic that could be followed by many future works exploring
solutions for extremely complex software projects. The authors did an excellent job in explaining their proposed technique, and illustrating their work using a clear and concise example.

For large projects, traditional project scheduling techniques cannot provide in timely manner an optimal solution to minimum project duration under precedence and resource constraints. This chapter proposes a technique that allows utilizing non-polynomial (NP) algorithms in a heuristic manner – generating high quality schedules in reasonable time. This approach could be efficiently applied for solving most project scheduling problems. The main advantage of this approach is its ability to dissect the original problem to small controllable size sub problems for which exact techniques can be applied. Thus, it neutralizes the complexity of the applied algorithms (and their non-polynomial growth). The authors discuss their experience applying this approach, and give useful insights as to the choice of its parameters. Moreover, the same technique fits naturally, and without adjustments in a rolling-horizon project planning and management, where uncertainty grows with the planning horizon.

SECTION 5: SPECIAL ENVIRONMENTS AND SECTORS

Section five consists of six chapters. Mastura Jaafar and Arkin Kong Chung King reveal the “Construction Briefing Process in Malaysia: Procedures and Problems in the Public Sector” in Chapter 13. The authors discuss about the application and procedures involved in developing a brief in the Public Work Department (PWD) in Malaysia. In developing countries, public sector plays a significant role in developing building facilities for the community. However, many public projects have been questioned in terms of their accountability, as the project suffers from delays, incompletion, low quality, and higher cost. Concurrently, many researchers tend to agree that an inadequate and unclear project brief is one of the main factors contributing to project failure. From industry perspective, many industry players still overlook on the importance of briefing in construction includes the low adoption of IT occur at this stage. Thus, it is crucial for public sector to identify the challenges and issues encountered in each development process to improve the public project performance. The development of a construction brief is a process of clarifying the objectives and requirements of a project at the early stage of project development. To help readers to understand the briefing process, the authors review few briefing process by different schools of thought including The Royal Institute of British Architects (RIBA) Plan of Work, The Process Protocol, and The Netherlands Approach.

Difficulties in getting the right person to reveal the information on public sector briefing process posed a challenge for the authors. Based on that limitation, the authors argue that the overall briefing process implemented by the public sector in Malaysia is very loose and does not follow any specific guidelines or procedures. As a developing country, political influence typically disrupts the transparency of procurement selection. The loose briefing process explains the failure of the parties to capture the clients’ requirements, resulting in lower client satisfaction. The parties involved in the process do not have any clear guidelines or ideas on how to determine their respective responsibilities in producing a strategic and comprehensive project brief. The authors conclude that most of the poor public project problems in Malaysia occur due to the lack of knowledge and inexperience of the parties involved in the process. Lack of commitment, coordination, and communication among the project members often result in failure to capture the clients’ requirement by the respective consultants. The authors are in mind that educating parties in the industry is a strategic move in order to enhance the knowledge and skill of the participating parties to mitigate the risk of project failure.
In Chapter 14, Rateb J. Sweis et al. identify “The Relationship between Information Technology Adoption and Job Satisfaction in the Jordanian Construction Industry.” Information Technology (IT) has played an important role in business since the 1950s and the use of technology to reduce costs, improve operations, enhance customer service, and improve communications has progressed rapidly over the past four decades. The present study sought to investigate the relationship between IT adoption and job satisfaction levels of employees working in the construction industry in Jordan.

The population of the study covered all working employees in the Jordanian construction industry. Judgment sampling was used as the sampling design that involves the choice of subjects who are most advantageously placed or in the best position to provide the information required by this research. The independent variable, IT adoption, was measured according to the IT Barometer Survey, using direct single questions and interval scale questions that used 5-point Likert scale to measure five dimensions: IT access, IT level of use, communication, role of IT in the company, and IT training and knowledge. Whereas job satisfaction, the dependent variable, was measured according to MSQ exploring 3 dimensions; intrinsic, extrinsic, and general job satisfaction. Moreover, goodness of research measures was assessed through checking the reliability and validity of scales.

Results indicated a nearly medium positive correlation between role of IT in the company and job satisfaction. However, no obvious correlation was found between IT level of use or communication and job satisfaction whereas the value of 0.079 correlating IT access to job satisfaction point out that there is relatively small positive relationship between these variables. The correlations are almost all in the expected direction. In reviewing the findings of this study, it was evident that the role of IT in the company and IT training and knowledge are the variables that most contributed to employee satisfaction within organizations working in the construction sector. Despite yielding interesting observations, there were no strong identified trends that would indicate potential relationship between IT level of use or communication and job satisfaction. In conclusion, results point out that more investment in technology would rather increase employee job satisfaction regarding intrinsic, extrinsic and general perspectives. This study would be of significance to construction industries in Jordan specifically and the Middle East generally due to the shortage of construction IT research in the Middle East. This research is poised to expand the general knowledge-base for further research into the area of construction industry and technology. The intellectual contribution of this research lies in providing evidence that IT adoption can improve intrinsic, extrinsic, and general job satisfaction in the Jordanian construction industry; and potentially elsewhere.

In Chapter 15, Thamaraiselvan Natarajan et al. offer a “Snapshot of Personnel Productivity Assessment in Indian IT Industry.” Productivity is one of the important parameter which decides the destiny of an organization. Conventional ways of measuring productivity does not hold well for measuring productivity of employees working for knowledge-intensive - IT organizations. Questions lurking unanswered relate to the effective criteria and international benchmarks. This chapter attempts to sketch the personnel productivity assessment methods used in Indian IT industry. Most companies have their own home-grown productivity calculators to track the progress of their projects. Different metrics used range from work-hours spent on a project to dollars spent per line of code to dollars spent on defects. Productivity encompasses the people as well as the systems built around them. Human resource function measures and maintains productivity benchmarks for each project, taking into consideration time, training requirements and Key Result Area (KRA) output per employee. Productivity within an IT organization differs from function to function. Which means, what constitutes productivity of a programmer will be very different from the productivity of a project manager.
Once the authors have defined the individual productivity norms, it is easier to focus action areas for improving it. The role of an IT worker is often a determining factor for measuring productivity. Functional Size Measurement, Lines of Code, Requirements Churn and Quality at Delivery, Revenue per employee, Constructive Cost Model (COCOMO), Data Envelopment Analysis (DEA), EVA or the Economic Value Added, Subjective Productivity Measurement (SPM), Knowledge Worker Productivity Assessment (KWPA) and Employee Engagement are some of the metrics used in Indian IT industry. Other metrics that are being applied to measure any productivity in general for business-wide implementation are the Balanced Scorecard, Performance Prism and the Cambridge Performance Measurement Process. Team-based productivity measurement approaches are TPM Process, 7-step TPM Process, and Total Measurement Development Method (TMDM). The chapter is particularly relevant to practicing knowledge-worker leaders and team members as awareness of productivity paves way for mutual progress—self and the organization. It helps to rapidly weed out excellent employees from not so great ones. Potential performers, non-performers can be traced and suitable talent development strategy can be adopted. Retention and replacement decisions can also be adjudged. Novices and practitioners will find the information in the chapter useful in helping to appreciate and understand how productivity assessment is carried out in the Indian IT arena.

Ioannis Koskosas and Nikolaos Sariannidis emphasize “Project Commitment in the Context of Information Security” in Chapter 16. Project management, particularly in information security, has emerged as a crucial factor that determines the success of an organization’s information flow security with an emphasis from within. Whether it is a question of facing a security breach or generating large confidential information flows, it plays a pivotal role in the growth of a firm. Information security can be viewed as the efficient control of uncertainty arising from malicious acts intended to exploit valuable assets, and in the context of information systems the valuable assets under consideration are data. In this research, data were collected by using an interpretive approach through in-depth interviews and observation within a single case study in Greece. The main contribution of this research to interpretive information-systems consists of the study of project commitment and goal theory in an information security-management context, and its grounding within an interpretive epistemology. The present research has taken a psychological-behavioral point of view by focusing on organizational commitment to information systems security projects in the context of goal setting. Hence, information security should support the mission of the organizations, it must be cost effective and must be in sync with employees’ information security understanding seamlessly, that is integrate technology, processes and people through efficient project commitment.

One of the main research findings was that if an information security task requires significant extra effort and interferes with the business tasks, business units need to understand the reason for this and be motivated to comply. Project management is a long procedure that needs involvement of many persons and requires an efficient plan to be followed, otherwise the whole project can go to a chaos. An effective and successful project commitment is not just about giving out information or about making stakeholders understand. Nowadays, successful project commitment can result when the quality of debate and understanding of security issues among all stakeholders is improved. In doing so, the process of project commitment with regard to information security will also improve. Since business-unit people are users of security, failure to understand security needs results to ineffective project commitment through misunderstanding in communication at the expense of information security. In the practical application of project commitment, the understanding leads to a clearer definition of the appropriate level of security measures to be taken. The challenges of innumeracy, heuristic and other biases add to difficulty of
project commitment about security. Nevertheless, these perspectives need to be recognized in order for goals to be successful and so project commitment with regard to information security risks.

In Chapter 17, Sandy Mehlhorn et al. propose “A Single-Objective Recovery Phase Model.” In the aftermath of a natural disaster, many municipalities begin repairs to transportation networks based on cost. Repairing the least expensive infrastructure items first is not necessarily the most efficient way to recover after a disaster. The routes that are completed using this method may not be the most beneficial to that city’s recovery. This research helps prioritize routes that should be completed first in order to expedite the recovery of the area after a natural disaster. Much emphasis has been placed on evacuation plans and first response after a disaster but this research focuses on the recovery phase. Existing recovery phase models deal primarily with travel times and do not focus on specific routes for reconstruction. This research goes beyond predicting damage to propose a plan for repair and restoration of bridges to restore a highway network that allows accessibility to key facilities in the area. This research differs from other recovery phase models in that actual routes are chosen for recovery based on given criteria. The single-objective optimization model developed in this chapter is a flexible model that can be applied to a variety of natural disaster situations.

The model can also be applied to other situations that involve damage to transportation components where decisions on recovery strategies must be made. The model provides flexibility to its user as to who or what areas will be given priority and the benefit assigned to that group. The information needed for the model is readily available for most state and local agencies who want to use the model for pre-planning for disaster events or after an event has occurred and recovery decisions must be made. Included in the chapter is a case study for Shelby County, Tennessee. The assumption has been made for the case study that priority is to be placed on the top 25 revenue-producing businesses in the county and decisions are made by the model based on that assumption. The case study is provided to show the reader that this model is a crucial first step in establishing a framework for decision-making for state and local officials developing a recovery strategy.

Chapter 18 entitled “Optimizing the Configuration of Development Teams Using EVA: The case of Ongoing Project Adjustments Facing Personnel Restrictions” is written by Alexander Baumeister and Alexander Floren. Resource constrained software development projects are likely to exceed the originally planned duration as well as the planned budget. These overruns arise out of the complexity, conformity and changeability of such projects. Nevertheless it has not been revised how project management can react on identified overruns during the completion of the project.

The authors demonstrate a new approach to optimize the configuration of software development teams by relocating working tasks from the critical path to non-critical activities. They use the resource performance index, a further development of the earned value metrics, to analyse the past performance of the project teams. The idea of transforming the earned value to an earned resource figure by changing the calculation basis is the first step the authors take to ensure that further calculations are founded on a reliable time based figure.

The basics of the earned resource are just briefly discussed, as its fundamental calculation principles do not change significantly in comparison to the earned value. Instead of that, the authors move on with their explorations to the challenges that arise for the project management when the progress of a critical work package is behind the originally planned schedule. They examine how to use the resource performance index in combination with a database that contains similarity performance factors to maximize the actual project performance by shifting resources within the project to the critical activities.
The similarity performance factors quantify the similarity between the tasks the resource currently deals with and those that have to be accomplished after the reallocation. It is unlikely that the shifted resources will gain a higher performance than the resources that are already employed on the critical path. Therefore the authors use the resource performance index to adjust the similarity performance index to the past performance. To solve the project overall performance maximization problem with underlying resource restrictions, which is a class of Knapsack problem and thus belonging to combinatorial optimization problems, the authors furthermore present an heuristic to overcome the complexity resulting from the NP-Hardness. They finally exemplarily show the improvements in the ongoing project management process and point out how their new approach enables the project management to react during project execution. With their chapter, Baumeister and Floren present insights to a hardly discussed field of project management especially as they provide a decision support approach for the management after deviations from the planned project performance were detected.

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