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A CONTEXTUALIST APPROACH TO THE DEVELOPMENT OF E-COMMERCE EDUCATION: AN ANALYSIS OF KEY ISSUES AND CHALLENGES

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ABSTRACT

A high-level review of existing literature on E-Commerce (EC) education reveals the need for a more theory-driven approach to further research on the development of EC education. In response to this need, the problem of EC education is analysed in this paper from a contextualist perspective found in the literature on organizational change and strategy. Specifically, Pettigrew's contextualist framework of research and analysis is adopted here to analyse the problem of EC education and its development. In the paper, we provide a brief expose′ of this framework in terms of its major premises and conceptual constructs. This is followed by a systematic application of the contextualist approach to analyse the current scenario of EC education in terms of its broader context, its content, as well as the change processes involved. Our analysis facilitates a logical identification of the key issues and challenges involved in EC education and its future development. A discussion of selected issues and challenges is presented along with some recommendations.

Keywords: contextualist approach, contextualist model, contextualist analysis, e-commerce education, educational program planning

INTRODUCTION

Even as the world of E-Commerce (EC) itself appears to be coming of age, emerging out of its initial boom/bust era and entering into a less volatile growth stage, the academic debates and controversies over EC education seem far from settled today. While the existing literature clearly recognizes the need for developing a more systematic approach to EC education, no definitive answers seem to be on the horizon for even basic questions such as: What should be the main goal(s) of EC education? What should be in an EC curriculum? Who should teach it? This is not to suggest that nothing can be learnt from the existing literature on EC education. Of course, several researchers have recently put the spotlight on the complexities and challenges of EC education today, and research interest in the area is clearly rising. For example, Rob [12] has narrated the details of a dramatic rise and fall of an EC program at one North American university. Based on a study of 67 EC Masters programs, Durlabhji

and Fusilier [5] characterize the situation of EC education as "ferment in business education," whereas Lightfoot [7] labels it as a dilemma of "fads versus fundamentals." Tomkovick, et al. [13] discuss the need for a cross-functional, multidisciplinary, approach to business education in general, and report on how such an approach was used in a pilot EC module at their university. Dhamija, et al. [4] have also given a rather detailed account of their experience of teaching EC to a multidisciplinary as well as multi-level class of students. While these works indeed help attract the research community's attention to the problems of EC education, they contain little analysis, in the form of research, towards developing a systematic understanding of the overall realm of EC education or its major challenges.

Dean and Nasirin [3] have also presented their suggestions for EC education based on their survey of top 50 business schools in the United Kingdom. They suggest that EC should be taught in an integrated/inter-disciplinary mode, where introductory EC content is incorporated within the traditional (functional) business courses, followed by EC specialty courses, and culminating in a multidisciplinary EC project/thesis work at the end. For the rapidly transforming nature of EC technology and applications, they suggest grounding the course content in time-tested principles, teaching patterns that transcend applications, and leveraging external experts. Again, while these suggestions may well apply to specific universities in certain socioeconomic contexts, from a research standpoint we cannot treat them as universal guidelines for EC education.

In conclusion, our analysis suggests that, while some basic questions about EC education (see opening paragraph) have been raised in this literature over the past several years, overall there are still no indications of any significant progress towards answering those questions. We believe this to be primarily due to the lack of any methodological direction and emphasis in the existing EC education literature. When viewed from a research perspective, this literature does not reveal any efforts based on any overarching research framework or methodology for describing the overall situation of EC education or for analyzing the problems therein. We could not even find any attempts aimed at developing a comprehensive "conceptual model" of the EC education scenario as a whole. In absence of such an overall conceptual model of what it is that we wish to investigate, and a methodology or analytical approach with which to do so, one cannot expect a clear "formulation" of the real problems facing EC education, let alone their solution. This explains the lack of any specific direction, and progress, in research on EC education today.

In view of the above analysis, the most urgent research need related to EC education today seems to be that of an adequately justifiable formulation of the overall EC education problem, developed by using a consciously adopted research approach and a conceptual model of the EC education scenario. In response to this need, in this paper we adopt a systems-oriented, holistic, approach and attempt to develop a comprehensive formulation of the problems of EC education and its future development. Specifically, Pettigrew's [9] [10] "contextualist" research framework from the organizational change literature is applied here, first to develop a comprehensive model of the EC education scenario as a whole, and then to identify the major issues and challenges facing EC educators and their institutions today. We believe that the EC educational issues and challenges identified through such a systematic research approach are ultimately more likely to be of more relevance and value to the real world practice (as well as theory) of EC education.

The organization of the paper is as follows. After the above overview analysis of the EC education literature, in the next section we provide a brief expose′ of Pettigrew's contextualist framework and the overall research approach involving it. This is followed by a systematic application of that approach to analyse the present scenario of EC education in terms of its broader context, its content, as well as the change process involved. An immediate result of such an application of the contextualist approach is a comprehensive conceptual model of EC education (Figure 1) which forms the basis for subsequent analysis presented in the paper. Specifically, we describe a novel model-scanning technique that is derived from the contextualist approach, and which facilitates a rather systematic identification of major issues and challenges from a contextualist model. The results of our application of this technique (to EC education) are then presented in the form of issues and challenges in the development of EC education and its future development. The paper concludes with a discussion of selected issues and challenges, leading to some recommendations.

THE CONTEXUALIST APPROACH TO ORGANIZATIONAL CHANGE RESEARCH

In this section, we provide a brief expose′ of the contextualist research approach in terms of its historical background, the basic concepts, and the ensuing framework for guiding organizational research in general and the analysis of organizational change in particular. This is necessary not only for the sake of completeness of our

paper, but also because, in a methodologically oriented work like this, it would be difficult to appreciate the value and validity of our results without having a basic understanding of the analysis approach used to arrive at them.

While the contextualist approach has started attracting significant attention in the mainstream organizational research only recently [11], this approach itself has actually been around for at least two decades! Without formally naming it as such in the mid-eighties, Pettigrew [9] formulated this approach in response to a long period of criticism and self-questioning in organizational research in general. In his view, "organizational change" had been traditionally studied mainly through snapshots of individual projects, or change episodes, without much attention to the higher level, contextual systems and their complex processes. Pettigrew labeled such treatment of organizational change as characteristically 'ahistoric, acontextual, and aprocessual' [9, p.35]. Here, we cannot go into the details of Pettigrew's critique of the organizational change literature, but report that he clearly saw the need for a new approach to this research in order to close the growing gap between the academic research and its relevance to real world organizations. To remedy this situation, Pettigrew proposed an explicitly "historical, processual, and contextual" approach that is, at the same time, a unique variation of the well-recognized systems thinking [6] and the systems approach [2]. Over the years, Pettigrew's approach has come to be known as the 'contextualist' approach or methodology, and has also been applied specifically to strategic change in organizations [10]. The following outline of the contextualist approach and its general framework for analysis is primarily based on Pettigrew's ideas [9] [10] [11].

In essence, the contextualist approach arises out of a conviction that, to be understood and studied effectively, organizations must be seen as "embedded" in and interacting with their social, cultural, political and historical context. The immediate effect of such a dynamic view of organizations is a profound shift of the researcher's attention and analysis away from mere "change" (in isolation from its context) to a whole new kind of contextually driven, dynamic, analysis of the "process" of change in organizations. This fundamental rationale underlies Pettigrew's plea for "a more process based and contextual mode of research …" [10, p.6] Pettigrew's own vision of such a mode of research is best understood from his following statement: "Thus, theoretically sound and practically useful research on change should involve the continuous interplay between ideas about the context of change, the process of change and the content of change together with … relations between the three." [10, p.7, our underlines] Since Pettigrew's specific connotations of these three concepts are rather crucial for a proper understanding of his research approach, we present them in more detail as follows:

- The Content of change includes both the particular area of transformation, i.e. what is undergoing the change, as well as certain "abstract features" of that change. [10, p.7] Typically, the object of change itself is an organization, its sub-unit, or its specific activity/operation. In terms of its abstract features, the change is typically classified as being radical versus incremental, as well as technological versus organizational/behavioral, in nature.

- The Context of change generally refers to the various systems levels that may be significant to the particular investigation and analysis. Pettigrew uses the term "outer context" for what is commonly called simply "environment," and "inner context" for all of the organization's internal structures and processes, e.g. management, strategy, culture and politics. This distinction between the inner and outer contexts really comes to the forefront of Pettigrew's approach in his view that the "over-reliance on the inner context" in the traditional change literature has led to a neglect of the wider, contextual issues. Hence, to follow the contextualist approach, one must pay a balanced attention to what is happening in both the inner and the outer contexts.

- The Process of change refers to the "actions, reactions and interactions of the various interested parties as they negotiate around proposals for change." Adopting a process-orientation requires a researcher to explicitly identify the major actors (individuals or groups) involved in a situation, and analyse how their goals and actions shape not only the ultimate change per se, but also the dynamics of the change-process itself! Additionally, Pettigrew emphasizes the need to "tie this process down to observed or documented behavior in context, as opposed to general statements of attitude" so as to avoid being carried away with "myths about rational problem solving processes and linear implementations." [10, p.7]

To summarize, the essence of these powerful concepts is best understood from Pettigrew's characterization of the content as "the What" of change, context as "the Why" of change, and process as "the How" of change." [10, p.7]

In addition, Pettigrew also explicitly draws our attention to the relations or "interconnections" among these three concepts. Deeply rooted in the general systems theory (GST), this really is the Gordian knot of the contextual approach and we cannot go into its details here. Nonetheless, in this context we find Pettigrew's following comments rather insightful: "The analytical challenge is to connect up the content, contexts and the processes of change over time to explain the differential achievement of change objectives. Perhaps the most critical connection is the way actors in the change process mobilize the contexts around them and in so doing provide legitimacy for change. Changes in the outer context can also be mobilized to fashion change." "The contexts … are not inert or objective entities. Just as managers and other actors perceive and construct their own versions of those contexts, so do they subjectively select their own versions of the environment around them and seek to reorder the … change agenda to meet perceived challenges and constraints." [10, p.9, our underline] We find these comments to be enlightening, because, they clearly emphasize the need to study what we would call the "drivers of change" (context and process) and their interactions. They also remind us that the interactions involved need to be studied both over time (that is, longitudinally) and over the systems' space (that is, across the hierarchic levels, and from the subjective as well as objective vantage points).

Finally, from the application standpoint of this paper, it is important to recognize that applying the contextualist approach in practice is far more challenging than one might think based solely on the simplicity and elegance of its three basic concepts. Pettigrew has clearly recognized this as he adopts a very "eclectic and processual" view of applying this approach to real life organizations. This is because, "Analysts need to be sensitive to both continuity and change, action and structure, endogenous and exogenous factors, and the role of chance as well as purposeful action." [10, p.8] As a result, researchers using the contextualist approach have to routinely deal with "competing explanations" and "varied causes of change" arising out of an amalgam of socio-economic, political, and cultural factors, and even "unintended consequences." While we are sensitive to these complexities, due to the limitations of space, our application here is primarily focused on demonstrating how the contextualist approach can be applied to the EC education scenario, and how that leads to a better understanding of the major issues and challenges to its future development.

APPLYING THE CONTEXTUALIST APPROACH TO EC EDUCATION

In terms of concretely applying the contextualist approach, it is useful to note the six key issues to which, according to Pettigrew, et al. [11], change researchers ought to pay greater attention. The first three of these issues seem so centrally important to the contextualist approach, that we regard them as Pettigrew's recommendations for applying this approach in practice. These recommendations are: (a) identify and examine the *multiple systems levels of the context* involved, (b) recognize the role of *history* in addition to that of the *present actors/processes,* and (c) examine the possible links between the change processes and organizational performance. Our application of the contextualist approach to EC education here is primarily guided by these three recommendations, and so it naturally begins with identifying the important systems levels within the EC education scenario.

A Contextualist Model of EC Education and its Environment

Figure 1 shows our model of EC education and its environment based on the above approach. We label it as a "contextualist" model after the approach from which it follows rather logically. The Inner Context (bold labels) is enclosed in the large dotted ellipse to distinguish it from the Outer Context. As the various entities shown are self-explanatory, we do not describe them in any further detail here. Instead, some methodological observations about the model as a whole, in terms of its significance and value for further research on EC education, are elaborated next.

First, given its expanse over the six levels, and the various types of entities within them, the model indeed appears rather comprehensive and complex, especially in view of all the interrelationships shown. As such, we expect that different researchers will find it useful in different ways depending on their research questions and research objectives. Second, we should note that, once we adopt the overall contextualist perspective, the various levels and the entities within them emerge in view rather easily, based simply on our general familiarity with the overall EC education scenario. Third, methodologically it is quite interesting that, out of the three fundamental operative concepts (i.e., content, context and process), it is

primarily the idea of the 'context' that is operative in generating the various model-levels as well as the entities within them. In contrast, as seen below, the ideas of content and process (of change) are the principal drivers of the subsequent contextual analysis itself. Finally, while the ultimate value of this research approach lies in what the subsequent analyses can tell us regarding possible development of EC education, we must not forget that the model in Figure 1 is itself the first pay-off, or a valuable result, from the use of the contextualist approach. This is because, in the existing EC education literature, we could not find any major efforts that try to model the overall scenario of EC education in a comprehensive manner, before analysing it.

A Novel Technique for Contextual Analysis: Heuristic Scanning of the Model for Change-Process Chains

To pursue the contextualist approach further, next we needed to apply its characteristically content and process-oriented mode of analysis to the above model, and see what major issues and problems emerge vis-à-vis the development of EC education. Here, we felt a clear need to further operationalize the contextualist approach, especially its analysis aspects, to devise a practical way of analysing complex models (here, Figure 1) to identify specific issues/challenges of possible empirical interest and significance. The specific analysis technique we developed for this purpose is best described as a "heuristic, two-way, model scanning for change-process chains." The overall rationale, and the general mechanics, of this novel analysis technique are explained below.

First, Pettigrew's notion of 'content' as "the What" of change sensitizes us to look for specific entities (in Figure 1) that are subject to possible change, as well as the particular nature of that change. As the principal arena of observable changes of interest, we focused our attention particularly on the Program Planning and Teaching/Learning systems within the Inner Context of EC education. Given our interest in a more planned future of EC education, here we looked for both the "reactive change" in response to environmental (outer context) pressures, and the planned "design-change" that may be intrinsically desirable from the academic and pedagogical perspectives on EC education per se. Second, the notion of 'process' as "the How" of change prompts us to examine significant "actions, reactions and interactions" of any "actors" in terms of how they cause or affect any changes in the EC education system. In either case, that is, starting either from the content-end or from the process-end, what we are looking for is a "significantly coupled chain" of actors, their actions, and the changes that they cause or influence. For brevity, we call such actor-action-change chains as "change-process chains," precisely because they represent the important change-processes within the contextualist model under investigation.

There is no simple recipe for directly pinpointing only the important or major change-process chains, that is, the sets of changes and specific actions/actors which impact them. Complete enumeration of such chains seems impractical due to the large number of actors, their actions, possible changes in their interests, and especially due to the many-to-many relationships involved. Instead, we found it helpful to adopt somewhat of a heuristic approach where we selectively start from either end (i.e. an important change or an important actor) of a possible chain, and then scan through the model to see if indeed a significantly coupled change-process chain emerges. Thus, in one direction, we start with those changes in (or aspects of) EC education that are known to be either important or controversial, and then examine which possible actions (plans, policies, etc.) of which actors are likely to impact such changes. In the other direction, we also scan the entire model (inner and outer context) for any actors that seem a priori influential vis-à-vis EC education, and critically examine their possible actions (as well as plans, postures, etc.) to see if a significant change-process can be substantiated.

In effect, our novel analysis technique amounts to a heuristic, two-way, scanning of the contextualist model in question, and reveals specific actor-action-change chains that can be considered as important change-processes within the domain of investigation. Hence, we name this technique as "heuristic, two-way, model scanning" for change-process chains. A major strength of this technique is its built-in objectivity, enhanced by the logical and objectively grounded reasoning which the researcher must follow as he/she systematically traces and validates a possible chain before declaring it as important. In addition, as this contextualist line of research continues, findings and observations from existing literature can be brought to bear upon this analysis to maximize their relevance in the ongoing debates about EC education.

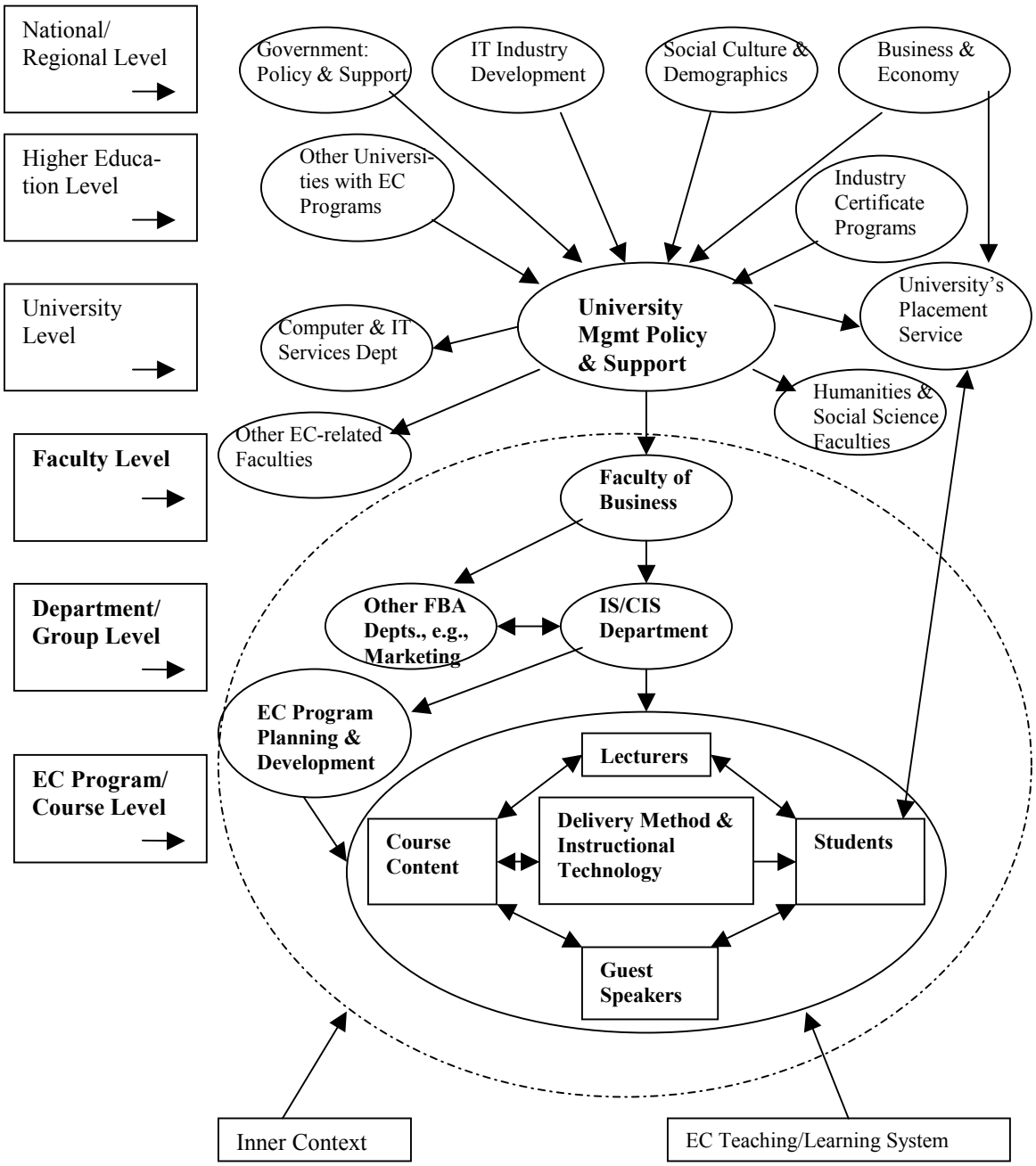

Figure 1: A Contextualist Model of EC Education and its Environment

RESULTS: ISSUES AND CHALLENGES IN THE DEVELOPMENT OF EC EDUCATION

As we analyzed the overall scenario or domain of EC education in Figure 1 using the above approach, a wide variety of issues and related challenges emerged. In this section, we present somewhat of an "integrated" view of certain selected issues that, in our view, reveal some of the most important challenges to effective development of EC education in future. It is an integrated view in the sense that, through continued analysis, we were able to identify certain broad-based "themes" (e.g. Issues in Design of EC Teaching/learning System) that seemed to organize and integrate specific sets of issues that would otherwise seem unrelated. The sub-section titles used below are largely reflective of such themes that emerged out of our analysis.

An important methodological observation from our analysis experience deserves a mention here. While trying to identify the major issues and challenges in EC education, we observed an important contrast between what could be considered as the basic change-related "issues" themselves and what were best regarded as the "challenges" pertaining to those issues. We found that Pettigrew's notion of the "content of change" or content-orientation seemed to be the main driver in identifying the basic issues per se, that is, questions of "what" (in EC education) should be changed or is being affected. In contrast, the "context" and "process" orientations seemed to play a more important, discriminating, role in identifying what could be considered as the associated "challenges." In fact, as we continued the analysis this realization seemed to put us on a faster "learning curve" in terms of our application of the contextualist approach.

Issues in Planning and Design of EC Education (The Content of Change)

First, we consciously adopted the content-orientation and scanned the EC education system (comprised of its Teaching/Learning system and the Program Planning/Development module) for any of its features that would be subject to change in a planned development of EC education. As the operational frontline of EC education, the EC Teaching/Learning system seemed to be the most fertile ground for a promising baseline exploration of the immediately observable content of change in EC education. In contrast, as the planning counterpart of this operational system, the Program Planning and Development module reveals certain higher order change-issues of relatively long-term importance to EC education at a given institution. Table 1 presents a compact listing of the various issues that revealed themselves as we employed this rationale and examined the nature, structure, and purpose of these two basic systems of EC education.

Many of the issues in Table 1 will appear rather familiar and self-explanatory to many readers who are involved with EC education. And yet, here it is important to underscore how these issues were identified in this paper. While many of these issues are reflected in the existing EC education literature that was not how we found them during the course of this work. Instead, the issues compiled in Table 1 emerged rather logically as we scanned and analysed the two EC education systems using the contextualist approach in somewhat of a structured fashion. In this sense, their familiarity and corroboration in the existing literature can actually be seen as indicators of their basic empirical validity.

Which of these issues are really important? From an empirical standpoint of the benefits to the field, important issues are those which contain significant "challenges" to the effective development of EC education. We can better pinpoint such issues if we now adopt more of a context/process orientation, and systematically scan the model (Figure 1) for possible challenges to EC educational developments. This is attempted below.

The Challenges involved in Program Planning of EC Education

As we examine the realm of Program Planning in Figure 1 from the contextualist perspective, we come across several areas of concern about whether and how such program planning occurs at present, and in particular about its effectiveness. Below, we identify and elaborate on these areas of concern, and show how they constitute the challenges to effective planning of EC education. To follow the contextualist approach, this analysis involves an examination of the various "actors" (who directly or indirectly affect EC education) in terms of possible differences in their goals, priorities, policies and possible actions.

Table 1: Basic Issues in Planning and Design of the EC Education Systems/Subsystems

System or Subsystem	The Issue	The Main Options and Questions Involved
Program Planning & Curriculum Design	• Academic Level • Program Scope • Operational Control	➢ UG, or Masters (MBA), or Both? ➢ A Degree Major, or Concentration, or only 1 Course (Compulsory or Elective?) ➢ One Department (which?) or Inter-Departmental? Single Faculty, Inter-faculty, or University's Office for IT/Computer-related Programs?
Course/Curriculum Content	• Overall Pedagogy • Orientation or Emphasis • EC Project	➢ Disciplinary, Bi-disciplinary (e.g. IS & Marketing), or Multidisciplinary (Significant coverage of perspectives from many diverse disciplines, even from Other Faculties) ➢ Technical and Technological or Business/Management or Mixed? ➢ No or Yes? Nature, Scope and Importance of the Project? ➢ Individual or Group Work? Weight in Grading?
Delivery Method & Instructional Technology	• Classroom • Time/Place Capabilities	➢ Basic classroom (with a Separate Lab) or Classroom with Workstations for students ➢ Online Delivery? Two-way communication? Lecture-on-Demand?
Lecturer and Guest Speakers	• Main Lecturer • Guest Speaker	➢ Individual? (from which Dept.?) or Team teaching? (Which Departments?) ➢ Technical, or Business, or Both Types? Importance in Grading?
Students	• Prerequisites • Supply & Demand	➢ Computer/PC Fundamentals? Introductory MIS? Internet/HTML? ➢ Large Enough Supply of Qualified Students in the Target Market? ➢ Adequate Demand for chosen EC Program Design in this market?

The Challenge of Effective Communication among Various Actors: Given the hectic pace with which EC educational programs were launched around the world, a priori there is little assurance that proper communication was really taking place among the various actors who affect Program Planning in EC education at a typical university. Looking at Figure 1, we see at least two major levels of actors whose goals, attitudes, and possible actions matter in planning of EC education at a particular university. Coming from the higher levels, we see the Administrative/Management types, e.g. the FBA Dean, VP of Academic Affairs, and VP of Finance. Closer to the EC education systems themselves, we see more Academic type actors, e.g. the individual faculty members involved in Program/Curriculum Development and teach-

ing. The sharp contrasts between these two types in terms of their goals, priorities, etc. should be all too familiar to many of our readers. Certain actors in pivotal positions, e.g. a Dept Head, necessarily wear both the academic and administrative hats, and constantly face the challenge of bridging communications between the two levels.

We believe that the above situation raises troubling questions about effective communication among the different levels of actors, which nonetheless affect EC educational planning in their own ways. Our concern is that poor communication among this diversity of actors is likely to result in a minimal and poor program planning of EC education within a university. This seems supported by the problems encountered by Dhamija, et al. [4] with regard to computer and system administration resources needed for their EC course, and their recommendation for advance planning and budgeting of such resources. In conclusion, it may be very desirable for a university to create and maintain a formal "ongoing forum" for improved communication among the various actors involved with EC education

The Challenges Related to University-level Strategic Planning: Within a typical university, the bulk of the EC Program Planning activities are often conducted at the level of the concerned faculty or even a department (in smaller universities). Yet, the ultimate financial and budgetary controls affecting the program mostly rest with the university's Top Management and their overall Strategic Plans for the university as a whole. Thus, it seems clear that, more than any factor (e.g. faculty quality or supply of students), the ultimate success of EC Program-level plans will critically depend on how well these plans actually "fit in" with the organization-level strategic plan of the university as a whole. This university-level strategic plan will obviously be based on the environmental changes and challenges as perceived by the top management of the university, and may indeed be quite sound from the perspective of the whole university. Still, the question of the fit between the two levels of planning remains open as long as conscious, and systematic, efforts are not aimed at ensuring such a fit. In fact, in the real world, it is easier to think of examples where (a) the university has chronically poor strategic plans or (b) the EC Program-level plan shows major inconsistencies with the university's strategic plans in place.

The Challenges from IT Industry Developments: Even beyond the university-level "outer context" of the EC program in Figure 1, we see several higher level systems/actors (e.g. Government) whose goals and actions can influence the development of an EC program within a university. Ideally, an exhaustive analysis would examine all such higher level systems for possible challenges they pose for EC education. Due to the limitations of space, we focus only on the IT-related aspects of this broader environment since they play a crucial role in E-commerce in general, and EC education in particular. Here, we need not elaborate on the fast changing, and increasingly powerful, nature of the Internet/Web technologies (or IT in general) dominating the real world of EC. Still, the contextualist approach to analysis almost requires us to examine, a bit more systematically, how such fast changing IT industry developments affect EC education and its development within the context of an academic institution.

To start with, the real world of EC itself is still relatively new and so, currently, there is little common understanding and consensus about how businesses themselves should plan and manage the fast changing IT used in EC. But, the associated challenges of strategic management of IT in general [8] represent only the starting point for exploring the same in the context of EC education. Compared to private business corporations, many universities tend to operate more like public, bureaucratic, organizations where change is slower, IT is less of a strategic resource, and strategic planning is heavily driven from the top. Moreover, IT for teaching purposes is often given a lower priority than the IT used for university's administrative information systems or MIS. Finally, as governmental funding keeps getting increasingly tighter, universities are expecting their academic programs to become more and more self-supporting. These observations clearly suggest that the complexities of the IT-related challenges to EC education may be far more complex than we think, and may be quite difficult to deal with. In conclusion, we believe that a lot of new research and fieldwork is needed to develop better coordination between Program Planning of IT-intensive programs like EC program and a university's strategic plans, especially its IT strategy.

The Challenges in Designing the EC Teaching/Learning System

After the general planning stage of EC program development, the design stage of work mainly concerns the details of overall curriculum design, specific course contents, and the design of the Teaching/Learning System itself (see Figure 1). Note that the basic *issues* of interest during this *design* stage were already identified in Table 1 by adopting the content-orientation of analysis. To identify the possible *challenges* involved, we again apply our

two-way model scanning technique from both ends of possible change-process chains, i.e. starting with specific issues in Table 1, as well as by profiling specific actors and processes involved in this design stage of the work. As we scan the model, our heuristic for detecting a possible challenge is simply this: If two actors, each of whom affects a particular issue in Table 1, also differ significantly in terms of their organizational roles, responsibilities (goals), views, etc., then this signifies a possible area of conflict or challenge within the domain of EC education design.

Our contextualist model of EC education (Figure 1) helps us readily identify the main categories of actors who typically affect (or are affected by) the design of an EC education program, namely: Curriculum/Course Designers, Lecturers, Guest-speakers, Students, as well as non-academic units like buildings (classrooms) department and IT Services. Fortunately, compared to the earlier diverse sets of actors involved with EC Program Planning, on the whole these categories appear to be much more homogeneous. For example, curriculum/course designers are often also lecturers, and vice versa. Therefore, we do not expect major challenges arising from such homogeneous sets of actors. Still, three areas of challenges in EC program design seem to be worth mentioning here:

- First, there is the familiar and growing challenge of adding real "value" to students' education while, at the same time, ensuring student satisfaction with the courses.
- In some situations, course designers and lecturers may be very different groups of academics, e.g. in distance learning. In such cases, EC program design faces important challenges in at least two areas, namely: Lecturer involvement in curriculum design and ensuring that course delivery (and execution of the curriculum as a whole) conforms to its intended design.
- In most universities, the classrooms (as physical structures) and the instructional IT systems are typically handled by two different administrative departments. Therefore, we expect some areas of challenges in related matters, e.g. classroom design customized for EC teaching, or upgrading the computer/network technology platforms specifically for EC teaching.

Finally, specific issues in Table 1 could themselves be examined in terms of their importance, the basic choices involved, and difficulties of finding a "compromise" solution, to see whether a particular issue points to specific challenges in the design area. We cannot undertake such a detailed analysis in this paper mainly aimed at demonstrating our new approach. Fortunately, the existing EC education literature already reveals several positions and discussions on some of these issues, e.g. general pedagogy (disciplinary versus multidisciplinary), curriculum emphasis (technology versus organizational/management aspects) and team-teaching [3] [5] [7] [13]. Further research along these lines should help to identify specific issues where important challenges of EC program/curriculum design reside.

DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

In this paper, we have applied a new research approach (i.e. Pettigrew's contextualist approach) and developed a comprehensive model of EC education. We have also articulated a new analysis technique (heuristic model scanning) based on that approach, and used it to identify a set of issues in, and challenges to, the effective development of EC education in future. In this section, we discuss our results, as well as the research approach used, in terms of their value and significance for further research on EC education, and try to provide some recommendations.

First, the cumulative body of our results seems large enough to say that it validates our initial notion of using the contextualist approach to investigate the domain of EC education. Apart from the sheer size, the following characteristics of our results also support this conclusion: (a) their Variety (including the Model, the basic Issues, and the Challenges), (b) Comprehensiveness of the model and the issues identified, and c) the Relative Ease with which the results emerged after an initial learning curve. More importantly, these characteristics of our results suggest that using such an approach may indeed provide a methodological direction and emphasis needed for an effective research on EC education.

Having demonstrated the basic methodological validity of the approach, let us consider how our results might help further research on EC education in a more concrete fashion. These, in effect, turn out to be the recommendations for further research on EC education, as outlined below:

- Traditional, questionnaire-based, large-sample surveys could be aimed at obtaining empirical support for specific components of

our results, particularly the specific issues and challenges which we have identified.

- Alternatively, in-depth case-studies of actual EC Programs, especially their development, would be valuable towards empirical support for the main categories of actors, and the general dynamics of their relationships, as articulated in our results.
- Finally, action-research style investigations in EC education would be desirable when continued research points to a set of broad recommendations, or General Guidelines, for EC Program Development. In fact, some tentative guidelines can be gleaned from our articulation of the issues and challenges (see previous section) by focusing on how best to deal with those challenges, e.g. creating an "ongoing forum" for improved communication among the various actors connected with EC education. Bringing together such imperatives found in our results, we propose the following set of guidelines that could be used in an action-research style investigation in EC education:
  - Ongoing IT Communications Forum: Create and use an Ongoing IT Communications Forum for effective communication among all groups of actors related to the EC program (perhaps, *all* such IT-intensive programs).
  - The Strategic Change Perspective: Approach EC Program Development from the Strategic Change perspective [10] for the University as a whole. This makes particular sense because of the strategic importance of the latest IT not only for the EC program itself, but also for the university in its competitive environment today.
  - University-level Strategic Plans: Healthy strategic planning culture at the University-level is a prerequisite for effective EC Program Development. Ensure that the university has a competitive strategy and associated Strategic Plans, including an IT Plan.
  - Coordination and Fit with the University-level Strategic Plans: Conduct the EC Program planning and design activities so as to ensure that the resulting EC Program Plans show adequate "fit," and proper coordination, with the university's Strategic Plans, especially its IT Plan.

Based on the above, we believe that our results, obtained through application of the contextualist approach, seem to provide a useful platform for formulating more methodical, comprehensive, and rigorous research efforts on EC education in the immediate future.

Before closing, we should acknowledge certain limitations of this paper. First, we could not present a more detailed description of the contextualist approach vis-à-vis its background and origins in systems theory. The amount of literature involved in doing that is so vast that we felt it would distract from our main goal, i.e. a demonstrative application of the contextualist approach to research on EC education. Second, our results are necessarily somewhat general since they were based on an all-encompassing generic EC education scenario without regard to any of its important variations, e.g. different kinds of universities (public/private), or national/regional differences. We felt this was a necessary trade-off here, because in this initial application of the contextualist approach to EC education, our main goal was to demonstrate the general viability and usefulness of the new approach. Further contextualist research on EC education should find it easier to focus on more specific EC education contexts. Finally, we have not dealt with the whole issue of "contextualizing" the EC Curriculum/Course "content" itself. This is because, compared to the broad scope of this investigation (i.e. EC Education scenario as a whole), the details of Curriculum/Course design indeed reside at a hierarchically much lower (deeper) systems level. To properly apply the contextualist approach to it, we really need to "zoom-in" down to that level and investigate it, afresh, from that vantage point. This involves developing a contextualist model of EC Curriculum itself, and then analysing that model using the approach illustrated in this paper. In effect, this amounts to a whole new contextualist research investigation which could not be attempted in the same paper.

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