INTEGRATION OF COMPUTER-ASSISTED TRANSLATION (CAT) TOOLS IN THE CURRICULA OF TRANSLATOR TRAINING PROGRAMMES IN THE OMANI CONTEXT

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by

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TABLE OF CONTENTS

ACKNOWLEDGEMENT		ii
TABLE OF CONTENT		iii
LIST OF TABLES		xi
LIST OF FIGURES		xii
ABSTRAK		xiv
ABSTRACT		xvi

CHAPTER 1 – INTRODUCTION

1.1	Research Background	1
1.2	The Sultanate of Oman	4
	1.2.1 General and Basic Education	4
	1.2.2 Higher Education	6
	1.2.3 Translation Training	6
	1.2.4 Undergraduate Translator Training	7
1.3	Statement of the Problem	7
1.4	Significance of the Study	10
1.5	Objectives of the Study	11
1.6	Research Questions	11
1.7	Theoretical Framework	12
1.8	Scope and Limitation of the Study	14
1.9	Definitions of Terms	14

CHAPTER 2 – LITERATURE REVIEW

2.1	Introduction	20
2.2	Translation Technology Development	21
	2.2.1 Historical Background	21
2.3	Computer-Assisted Translation (CAT) Tools	25
2.4	Translation Roles: Human vs. CAT Tools	26
2.5	CAT Tools Models	27
2.6	Translation Technological Competency	32
2.7	The Translator's Professional Profile	32
2.8	Modern Translation Competencies	34
2.9	Integration of CAT Tools in Curricula	35
2.10	Research on CAT Tools Integration	37
2.11	CAT Tools Integration Attempts	44
	2.11.1 The Socio-cultural Factor	50
	2.11.2 The Economic Factor	53
	2.11.3 The Technical Factor	54
2.12	Translation Market Demands and CAT Tools Integration	55
2.13	Theoretical Framework for Investigating the Contextual Factors	58
2.14	Diffusion of Innovations Theory	60
2.15	Attributes of Innovations and Rate of Adoption	61
	2.15.1 Perceived Attributes of Innovations	62
	2.15.2 Type of Innovation Decision	68
	2.15.3 Nature of Communication Channels	68
	2.15.4 Social System	69
	2.15.5 Extent of Change Agent's Promotion	70

2.15.6 Categories of Innovations Adopters 72

2.16 Conclusion 73

CHAPTER 3 – METHODOLOGY

3.1 Introduction 75

3.2 Research Methodology 75

3.2.1 Characteristics of Qualitative Research 76

3.3 Research Design 78

3.3.1 Case Study Approach 78

3.3.2 Multiple Case Study 79

3.3.3 Literal Replication 80

3.3.4 Unit of Analysis 81

3.4 Data Collection Process 82

3.4.1 Selection of Cases and Participants 82

3.4.2 Case Study Protocol 85

3.4.3 Interviews 85

3.4.4 Preparing for Interviews 86

3.4.5 Interview Guides 86

3.4.6 Interviewing 87

3.4.7 Recording Interviews 89

3.4.8 Data from Documents 89

3.5 Analysis Approach 90

3.5.1 Analysis Strategy 90

3.5.2 Single case Analysis 91

3.5.3 Coding Process 91

3.5.4 Cross-case Analysis 93

3.6 Conclusion 94

CHAPTER 4 – FINDINGS

4.1 Introduction 95

4.2 The Study Foundation 95

4.3 Data Collection and Analysis 96

4.4 Presentation of Findings 96

4.5 Section One: Case Study One (Findings from SUTTP) 97

4.5.1 The Perceptions towards CAT Tools Findings 98

4.5.2 The Status of CAT Tools Integration 102

4.5.3 The Influence of the Contextual Factors 106

4.5.3(a) Socio-cultural Factors 106

4.5.3(a)(i) Nature of the Social System 106

4.5.3(a)(ii) Type of Innovation Decision 108

4.5.3(a)(iii) Communication Channels 110

4.5.3(b) Technical Factors 113

4.5.3(b)(i) Teachers' Technical Aptitudes 113

4.5.3(b)(ii) Students' Technical Preparedness 115

4.5.3(b)(iii) Infrastructure 118

4.5.3(b)(iv) Change Agent's Efforts 121

4.5.3(c) Economic Factor 122

4.5.4 Suggestion of CAT Tools Applications 125

4.5.5 Conclusion 128

4.6 Section Two: Case Study Two (Findings from UNTTP) 129

4.6.1 The Perception towards CAT Tools Training 130
4.6.2 The Status of CAT Tools Integration 135
4.6.3 The Influence of the Contextual Factors 136
4.6.3(a) Socio-cultural Factor 136
4.6.3(a)(i) Nature of the Social system 136
4.6.3(a)(ii) Type of Innovation Decision 138
4.6.3(a)(iii) Communication Channels 139
4.6.3(b) Technical Factor 141
4.6.3(b)(i) Teachers' Technical Aptitudes 141
4.6.3(b)(ii) Students' Technical Preparedness 144
4.6.3(b)(iii) Technical Infrastructure 147
4.6.3(b)(iv) Change Agent's Efforts 149
4.6.3(c) Economic Factor 150
4.6.4 Suggestion of CAT Tools Applications 151
4.6.5 Conclusion 154
4.7 Section Three: Case Study Three (Findings from DUTTP) 155
4.7.1 The Perceptions towards CAT Tools Training 156
4.7.2 The Status of CAT Tools Integration 161
4.7.3 The Influence of the Contextual Factors 165
4.7.3(a) Socio-cultural Factor 165
4.7.3(a)(i) Nature of the Social system 165
4.7.3(a)(ii) Type of Innovation Decision 167
4.7.3(a)(iii) Communication Channels 168
4.7.3(b) Technical Factor 170
4.7.3(b)(i) Teachers' Technical Aptitudes 170

4.7.3(b)(ii) Students' Technical Preparedness 173
4.7.3(b)(iii) Infrastructure 176
4.7.3(b)(iv) Change Agent Efforts 178
4.7.3(c) Economic Factor 179
4.7.4 Suggestion of CAT Tools Applications 182
4.7.5 Conclusion 184
4.8 Section Four: Case Study Four (Findings from BUCTTP) 185
4.8.1 Perceptions towards CAT Tools Training 186
4.8.2 The Status of CAT Tools Integration 190
4.8.3 The Influence of the Contextual Factors 193
4.8.3(a) Socio-cultural Factor 193
4.8.3(a)(i) Nature of the Social System 193
4.8.3(a)(ii) Type of Innovation Decision 194
4.8.3(a)(iii) Communication Channels 195
4.8.3(b) Technical Factor 198
4.8.3(b)(i) Teachers' Technical Aptitude 198
4.8.3(b)(ii) Students' Technical Preparedness 199
4.8.3(b)(iii) Technical Infrastructure 202
4.8.3(b)(iv) Extent of Change Agent Efforts 203
4.8.3(c) Economic Factor 204
4.8.4 Suggestion of CAT Tools Applications 207
4.8.5 Conclusion 209
4.9 Section Five: Case Study Five (Findings from SQUTTP) 210
4.9.1 The Perceptions towards CAT Tools Training 211
4.9.2 The Current Status of CAT Tools Integration 218

4.9.3 The Influence of the Contextual Factors 220
4.9.3(a) Socio-cultural Factor 220
4.9.3(a)(i) Nature of the Social System 220
4.9.3(a)(ii) Type of Innovation Decision 224
4.9.3(a)(iii) Communication Channels 225
4.9.3(b) Technical Factor 227
4.9.3(b)(i) Teachers' Technical Aptitudes 227
4.9.3(b)(ii) Students' Technical Preparedness 230
4.9.3(b) iii. Technical Infrastructure 233
4.9.3(b)(iv) Change Agent's Efforts 235
4.9.3(c) Economic Factor 236
4.9.4 Suggestion of CAT Tools Applications 237
4.9.5 Conclusion 240
4.10 Section Six: Cross-case Discussion 241
4.10.1 Introduction 241
4.10.2 The Perception towards CAT Tools Training 242
4.10.3 The Status of CAT Tools Integration 246
4.10.4 The Influence of the Contextual Factors 248
4.10.4(a) Socio-cultural Factor 248
4.10.4(a)(i) Nature of the Social System 249
4.10.4(a)(ii) Type of Innovation Decision 251
4.10.4(a)(iii) Communication Channels 252
4.10.4(b) Technical Factor 253
4.10.4(b)(i) Teachers' Technical Aptitude 253
4.10.4(b)(ii) Students' Technical Preparedness 254
4.10.4(b)(iii) Technical Infrastructure 255
4.10.4(b)(iv) Change Agent Efforts 256

4.10.4(c) Economic Factor 258

4.10.5 Suggestion of CAT Tools Applications 259

4.10.6 Conclusion 263

CHAPTER 5 – CONCLUSION

5.1 Introduction 267

5.2 Background to the Study 267

5.3 Summary of the Study 268

5.4 Reflection on the Findings 269

5.4.1 The Perceptions towards CAT Tools Training 269

5.4.2 The Current Status of CAT Tools Integration in the Training Practices 271

5.4.3 The Influence of the Contextual Factors on the Integration of CAT Tools Training in the Curricula 272

5.4.3(a) Socio-cultural Factor 272

5.4.3(b) Technical Factor 274

5.4.3(c) Economic Factor 275

5.4.4 The Suggested CAT Tools Applications for the Omani Translator Training Programmes 276

5.5 Limitations 277

5.6 Implications and Contribution of the Study 278

5.7 Recommendations for Further Research 279

REFERENCES **281**

APPENDICES

LIST OF TABLES

		Page
Table 2.1	Melby’s Model of Translator’s Workstation	28
Table 2.2	Melby's Eight Types Model	31
Table 2.3	Bowker’s Overview of Translation Technology	31
Table 4.1	SUTTP Interview log	98
Table 4.2	SUTTP Individual Interviews Profiles	98
Table 4.3	SUTTP Focus Groups Interviews Profiles	98
Table 4.4	UNTTP Interview log	129
Table 4.5	UNCTTP Individual Interviews Profiles	129
Table 4.6	UNTTP Focus Groups Interviews Profiles	129
Table 4.7	DUTTP Interviews log	155
Table 4.8	DUTTP Individual Interviews Profiles	155
Table 4.9	DUTTP Focus Groups Interviews Profiles	156
Table 4.10	BUCTTP Interviews log	185
Table 4.11	BUCTTP Individual Interviews Profiles	185
Table 4.12	BUCTTP Focus Groups Interviews Profiles	185
Table 4.13	SQUTTP Interviews log	210
Table 4.14	SQUTTP Individual Interviews Profiles	211
Table 4.15	SQUTTP Focus Groups Interviews Profiles	211
Table 4.16	Staff Beliefs and Perspectives	245
Table 4.17	Matrix - Cross-case Anal ysis	264

LIST OF FIGURES

		Page
Figure 2.1	Dimensions of Translation Automation	30
Figure 2.2	Variables of Rate of Adoption (Rogers, 2003)	72
Figure 4.1	Staff Beliefs and Perspectives about CAT Tools Integration	245
Figure 4.2	The Frequency of CAT Tools Suggestions	262

LIST OF ABBREVIATIONS

BUC	Al-Buraimi University College
BUCTTP	Al-Buraimi University College Translator Training Programme
CAT	Computer Assisted Translation
DU	Dhofar University
DUTTP	Dhofar University Translator Training Programme
DoI	Diffusion of Innovation
GFP	General Foundation Programme
IT	Information Technology
OAAA	Oman Academic Accreditation Authority
SQU	Sultan Qaboos University
SQUTPP	Sultan Qaboos University Translator Training Programme
SU	Sohar University
SUTPP	Sohar University Translator Training Programme
UoN	University of Nizwa
UNTTP	University of Nizwa Translator Training Programme

INTEGRASI PERALATAN PENTERJEMAHAN BANTUAN KOMPUTER (CAT) DI DALAM KURIKULUM LATIHAN PENTERJEMAH DI OMAN-KAJIAN KES BERBILANG

ABSTRAK

Peralatan penterjemahan bantuan komputer (CAT) menjadi salah satu elemen penting dalam profil penterjemah moden yang memerlukan pelajar dilengkapkan dengan kecekapan penting ini sebelum mereka menyertai bidang perterjemahan professional. Program latihan penterjemah harus memasukkan latihan peralatan CAT di dalam kurikulum mereka. Walaupun ini mendapat respon daripada beberapa program latihan penterjemah, terutamanya daripada negara Barat, ia masih lagi tidak mendapat perhatian dalam kurikulum program latihan penterjemah di Oman. Kajian ini mengkaji tentang status terkini latihan peralatan CAT dalam kurikulum penterjemahan Oman. Ia meneroka faktor kebudayaan, ekonomi dan teknikal sebagai tambahan untuk elemen signifikan yang mempunyai impak besar ke atas integrase latihan peralatan CAT dalam kurikulum terjemahan. Ini merupakan penyelidikan kualitatif melibatkan berbilang reka bentuk kajian kes iaitu lima institusi latihan penterjemah di Oman yang dikaji berasingan di bawah satu sektor pendidikan terjemahan Oman bagi membentuk berbilang kajian kes. Bentuk/Rangka teori kajian menggunakan konsep teori Difusi Inovasi untuk menjawab persoalan dalam penyelidikan dan mencapai objektif. Kajian mendapati bahawa terdapat usaha untuk menggabungkan latihan peralatan CAT di dalam kurikulum Oman tetapi ia masih belum lengkap dan perlu disemak dan dirumuskan semula. Tambahan lagi, salah satu objektif kajian mencadangkan model latihan dibangunkan mengikut perspektif dan

pandangan pemegang taruh dalam konteks kajian bagi menyesuaikannya dengan pelajar Oman. Walaupun kajian ini terhad kepada penetapan terjemahan Oman, hasil boleh disesuaikan dengan replikasi dalam penetapan lain yang berkongsi konteks sama dengan ciri-ciri pendidikan terjemahan Oman.

INTEGRATION OF COMPUTER-ASSISTED TRANSLATION (CAT) TOOLS IN THE CURRICULA OF TRANSLATOR TRAINING PROGRAMMES IN THE OMANI CONTEXT

ABSTRACT

As Computer Assisted Translation (CAT) tools have become one of the essential elements in the modern translator's profile, it is important to equip student translators with this essential competence before joining the professional field. Accordingly, translator training programmes should include CAT tools training in their curricula. While this has been responded to by several translator training programmes, such as western developed countries, it is not clearly seen in the curricula of translator training programmes in Oman. This study investigated the current status of CAT tools training in the Omani translation curricula. It explored the cultural, economic and technical factors in addition to the other associated constructs, which represent significant elements with major impacts on the integration of CAT tools training in translation curricula. This work is a qualitative research, a multiple case study design, where five translator training institutions in Oman were studied as separate cases under the umbrella of the Omani translation education sector to form a multiple case study. The theoretical framework of the study made use of the concepts of the Diffusion of Innovation theory to answer the research questions and achieve the objectives. The study found that there are some attempts to integrate CAT tools training in the Omani translation curricula, but they are still incomplete, they need to be revised and reformulated. Moreover, as one of its objectives is to provide a suitable set of CAT tools to train Omani students on translation technology practices, the study provided constructive suggestions for this purpose built on the perspectives and views

of the stakeholders in the studied contexts. Finally, although the study is limited to the Omani translation setting, the results can be suitable to replication in the other settings that share the Omani translation education setting the same characteristics.

CHAPTER 1

INTRODUCTION

1.1 Research Background

One of the great changes that the world has experienced during the last decades, within the context of globalization, is the remarkable advancement in technology and its uses. Advanced technological devices and applications have touched all aspects of life by making use of computer programmes which have basically been designed to facilitate the human activities.

Translation practices have been influenced by the new computer applications and tools which changed the mode of translation activities and standards "Modern technology has transposed some of the translator's traditional tools to a new and more flexible medium" (Newton, 2002, p. 1). By using these new technological facilities, translators cultivate the results of constant efforts and continuous translation research that have been going on for long decades. This active research started in 1960s and attempted to use machines in translation processes, even before the invention of computers (Hutchins, 1986) .

The recent decades have witnessed significant advances in translating to facilitate translator's work and to raise the standards of translation product. One of the momentous advancements in this field is the emergence of Computer Assisted Translation (CAT) Tools which compile a set of computer tools that have been developed to help translators manage translation processes. This set of tools includes a number of computer applications grouped under what is called translator's workstation or translator's workbench (C. K. Quah, 2006).

CAT tools, together with other translation computer applications, have changed the ways of doing translation job. Mastering the use of these tools has become

one of the basic requirements of a modern translator's professional profile. To coup with this outstanding development, translator training programmes are expected to respond to this situation by integrating CAT tools in their training curricula to ensure proper preparation for their student translators and to provide them with the essential competencies that are necessary for the discipline's professional requirements and to respond to the market's demands.

However, this essential training element is not well integrated in the curricula of the translator training programmes in Oman. The current translation training syllabi of these programmes do not provide proper CAT tools training. They rather reflect substantial deficiencies which form significant gaps in the training plans of the translation education context in Oman. Such training deficiencies exist form different cases in the five programmes that constitute the translator training setting in Oman. In two programmes, CAT tools training is not introduced to the undergraduate translation students, because it is not integrated in the relevant curricula, although it is already available in the practices of the programme at the postgraduate level. In the other two programmes it does exist in the training plans of the programmes as an elective module not, students may not take it. In the fifth programme CAT tools training is introduced in a limited manner that does not respond to the expectations and objectives behind this training element.

The above facts represent clear cases of insufficient implementation of CAT tools training. It is a contextual situation shared by all the programmes involved in translator training in Oman. It is an inadequate integration of CAT tools training in the existing curricula. There should be significant factors that hinder the proper integration of this important training module. It is a condition that need to be well considered and deeply investigated to understand both the context and the existing phenomenon. A

thorough investigation of the whole relevant factors can lead to a better integration of CAT tools training in the context of translator training in Oman.

There are different studies that encourage the integration of CAT tools in the curricula of translators training programme to respond to the requirements of the profession and to fulfil the market demands in the way that suites the global changes (Durban, Martin, Mossop, Ros, & Searles-Ridge, 2003; Li, 2000; Ulrych, 1996). Nevertheless, these works do not consider the contextual factors in translator training programmes which could influence the integration of technology in educational environments. The present study addresses this research gap which should be well considered to ensure proper integration of CAT tools training based on contextual facts. It investigates the current status of CAT tools training in the Omani translator training as well as examining the attitude of the concerned parties towards the idea of CAT tools integration. Moreover, it explores the challenges that hinder the proper integration of the tools in the curricula of the Omani translator training programmes with particular focus on the specific features that characterize the Omani translation education context, specifically the economic, cultural and technical factors and their effects on the translation education and practices.

The contextual factors have been the topic of focus for different theories and models that have tackled the issue of technology integration. Examples of such models include Technology Acceptance Model (TAM) by Davis (1989), the Technology, Organization, Environment (TOE) framework by Depietro, Wiarda, and Fleischer (1990), Unified Theory of Acceptance and Use of Technology (UTAU) by Venkatesh, Morris, Davis, and Davis (2003) and Diffusion of Innovation by Rogers (2003). The current study is particularly interested in Rogers (2003) model which provides a more detailed concepts for studying the diffusion of new ideas, like

technological practices, in communities. It considers the contextual elements with a wider focus, compared to the other models, by including the economic factors as well as the other related aspects under what the model's developer calls the Perceived Attributes of Innovation and Rate of Adoption. Therefore, Rogers' (2003) principles are used to investigate the integration of CAT tools training in the curricula of the Omani translator training programmes.

1.2 The Sultanate of Oman

Oman is an Arab developing country located in the South-Eastern part of the Arabian Peninsula, boarded by Saudi Arabia at the West, United Arab Emirates at the Northwest and Yemen at the South-West, with a long coast overlooking the Arabian Gulf, the Gulf of Oman and the Arabian Sea at the Eastern sides of the country. According to the Omani National Centre for Statistics and Iinformation (2014), the total population of Oman in the middle of 2014 was 3,992,893 Omanis, 2,260,705 nationals and 1,732,188 expatriates. The United Nations Development Programme (2010) describes Oman as one of the most progressive states in the world with a middle-income economy according to the Middle Eastern standards (Bertelsmann, 2012).

1.2.1 General and Basic Education

The tangible expansion and reforms of the Omani educational system occurred in 1970s as soon his Majesty Sultan Qaboos bin Said came to reign. For long years the General Education system was the main educational structure in the country. It consisted of three different stages: primary, preparatory and secondary schooling. However, in 1998/99 the Ministry of Education introduced the two-cycle basic

education system followed by a two-year secondary stage. The new system was firstly applied in a limited number of schools along with the old general education system in the other schools. The two systems worked simultaneously, but according to the Ministry of Education's plan the schools applying the old general education system were reduced gradually until the basic education system took over in all the schools of the Sultanate.

The rationale behind the changes applied in the Omani education system in the recent decades is reflected in the government's plans which seek to develop human resources in the way that suits the local and global requirements of the era. The intention to produce students with critical thinking skills and problem-solving competencies through practical experiences and real-life situations were among the main objectives that constituted the Omani basic education system. These themes have always been fundamental elements in the government's visions about education as stated by Al-Belushi, Al-Adawi, and Al-Ketani (1999) and cited in (Rassekh, 2004)

"The challenges facing Oman, particularly the need of self-sufficiency and the need to diversify the economy and keep pace with technological change, require new educational goals to prepare Omanis for life and work in the new conditions created by the modern global economy. These will require a high degree of adaptability and a strong background in mathematics and science to independently apply rapidly changing technologies to Oman's needs. The proposed educational reforms are designed to achieve the knowledge and mental skills and attitudes that young Omanis will need to learn and adapt to the very different future most of them will face" (Rassekh, 2004 , p.9).

The educational reforms in the Sultanate came in line with the Omani vision 2020. It specified in its set of objectives providing students with basic education and

responding to the future social needs through well-set themes for secondary education schooling. It moreover asked for reinforcing scientific education at schools and dealing with computer literacy as one of the basic learning objectives and initiating the teaching of English language at basic education stage. Such visions and reforms highlight the developmental orientation of Oman in the educational sector that closely relates to the objectives of this study.

1.2.2 Higher Education

Higher education in Oman can be described as one of the most developing sectors in the Sultanate. Throughout the last three decades, after the establishment of the leading Sultan Qaboos University in 1986, higher education has witnessed significant development. In 1995, the public Intermediate Teacher Training Colleges, which were established and run by the Ministry of Education, were turned into the Colleges of Education under the authority of the Ministry of Higher Education. In 2005, the Colleges of Education were promoted to Colleges of Applied Sciences to prepare graduates for certain specialization areas in response to the Omani labour market needs.

The private sector of Higher Education, on the other hand, has broadened widely during recent years. Today there are seven private universities and nineteen university colleges in the Sultanate of Oman offering different degrees in various specializations.

1.2.3 Translation Training

Translation Training in Oman has witnessed obvious expansion in recent years. Translation degrees are offered through different Translator training programmes in

the oldest and biggest four universities in the Sultanate in addition to one university college. The following list includes the Omani five higher education institutions that offer translation degrees.

1. College of Arts and Social Sciences - Sultan Qaboos Universities
2. Faculty of English and Languages Studies - Sohar University
3. College of Arts and Applied Sciences - Dhofar University
4. College of Arts and Sciences - University of Nizaw
5. Department of English - Alburiami University College.

1.2.4 Undergraduate Translator Training

The translation degrees offered by the above higher education institutions vary from one programme to another. While Sultan Qaboos University and University of Nizwa offer both undergraduate and postgraduate degrees in translation, the other three institutions limit their offered translation degrees to the undergraduate level. As per the limitation of this study, the study focuses only on the undergraduate degree offered in the Omani translation training programme.

1.3 Statement of the Problem

Computer-assisted translation (CAT) tools are considered today as essential elements in the practices of translation profession. Mastering the use of these tools has become one of the significant components of the modern translator's professional profile which is formed and decided according to the current translation market demands and requirements of the discipline. It is an important requirement that should be urgently fulfilled by translation training bodies to equip their trainee translators with fundamental tools of the profession.

Because of their importance, the calls for integrating CAT tools in the curricula of translators training programme are several and unceasing. The response to such increasing calls are clearly seen in different settings of translation training institutions around the world, particularly in the West. Several institutions in these countries succeeded in providing full-fledged CAT tools training in response to the growing demand on these tools to ensure well trained translators equipped with the necessary skills.

However, this is not the case in the Omani translator training programmes. The current situation of CAT tools training in these programmes signifies obvious inadequateness in integrating the tools in the existing curricula. This is represented by different situations leading to improper implementation of CAT tools training in the five-translator training programme. At Sultan Qaboos University and University of Nizwa, CAT tools training is not introduced to the students at the undergraduate level, although it is part of the postgraduate curricula at Diploma and Masters Levels. Similarly, at Dhofar University, CAT tools training is not introduced, instead, there is only one elective course about machine translation which focuses on topics of no direct relevance to the standard scope of CAT tools applications and practices. At Buriami University College CAT tools training is integrated through one elective course. It is not a compulsory module that supposed to equip these trainee translators with important skills. Instead, it is an optional element, students may choose not to take it. In other words, students can graduate without acquiring this important skill while they could have acquired it if it had been presented as a compulsory element. At Sohar University, translation technology training is offered as a part of one course which has basically been developed to address certain learning outcomes that do not give the required focus to CAT tools practices. Based on the above argument, the integration

of CAT tools training in the Omani translation education curricula can be summarised in three situations: (1) complete absence of CAT tools training in the existing curricula (2) offering CAT tools training as nonessential or optional training (3) introducing CAT tools training as a partial training element that lacks the required focus. The three situations form the current status of inadequate integration of CAT tools training situation. It is a status that does not correspond to the modern trend in translation education practices which deals with CAT tools training as an essential skill, supposed to be part of translators' preparation.

However, it is not advisable to discuss this significant deficiency in the Omani translator training curricula apart from considering the core factors that influence the context of the translation education in the country. The absolute replication of other experiences, like the western one for instance, is not advisable. The Omani context should lead its own experience based on its characteristics and needs based on its own contextual facts which are logically influenced by the local factors and their effects on technology acceptance in all fields including the educational setting. Such factors include the cultural aspects that relate to the standards of dealing with technology culture in the studied context. Then, there are the technical aspects which ought to be given full consideration since the integration and use of technology processes are basically technical practices. Another essential aspect is the economic characteristics which are imposed by the fact that technology adoption requires economic resources to provide technology.

The current study investigates the three factors which are believed to have significant effect on the current inadequate situation of CAT tools integration in the curricula of translation education in Oman. The causes behind the integration inadequacy would be explained accordingly. In turn, solutions and suggestions for

better integration will be worked out. On the other hand, highlighting the particular features of the Omani translation training context, in the light of the cultural, technical and economic factors, would reinforce the idea that the integration of technology should be decided based on the contextual characteristics of the concerned setting. Hence, the right CAT tools to be integrated in the curricula of translator training programmes would be sorted out according to the needs and characteristics of the Omani setting.

1.4 Significance of the Study

This work highlights the importance of integrating translation technology practices to the curricula of translation training. It provides significant facts about the current status of translation technology training in the Omani context of translation education which has never been studied before with a focus on this theme.

The study draws the attention to the impacts of contextual factors on translator training issues, particularly CAT tools practices which have become an indispensable component of the modern translator's profile. The data provided by the study, together with the results, can be used for reviewing and reforming the existing translation training programmes to incorporate translation technology training as a momentous aspect of modern translation training. Additionally, the results and implications of the study can be applied to the other contexts that share the Omani setting the same characteristics.

1.5 Objectives of the Study

1. to investigate the present implementation of CAT tools training in the curricular of translator training programmes in Oman.
2. to inspect the perception of the concerned people in the Omani translator training programmes about the issue of integrating CAT tools training in the insinuations' curricula.
3. to explore the impacts of the contextual cultural, economic and technical factors on the integration of CAT tools in the curricula of translator training programmes in Oman.
4. to propose a particular CAT tools application that suit the translator training setting in Oman.

1.6 Research Questions

This study sets out to answer the following questions:

1. How is CAT tools training idea perceived by the concerned individuals and groups in the translator training programmes in Oman?
2. What is the current status of integrating CAT tools in the training practices of translator training programmes in Oman?
3. How is the integration of CAT tools training in the curricula of translation training programmes in Oman influenced by the contextual cultural, economic and technical factors?
4. What are the best CAT tools applications to train the students in the Omani translator training programmes?

1.7 Theoretical Framework

Since the subject of this study focuses on the uses of translation technology and training novice translators on its practices, the best theoretical framework for conducting this study should be one of the reliable models that treat the issues of technology acceptance and use. Thus, the theoretical framework of the current study provides essential consideration to diffusing CAT tools usage and training and integrating them in the curricula of the Omani translation education institutions. Moreover, this framework considers the impacts of the contextual factors on integrating CAT tools technology. Based on this rationale, Rogers' (2003) theory Diffusion of Innovation has been implemented as a theoretical framework for this study.

It is worth mentioning that Diffusion of Innovations theory has widely been used as a theoretical framework for thousands research works in different fields of knowledge, including education and technology (Rokhman, 2011). According to Sahin (2006), diffusion of innovations is the most suitable model for investigating the use of technology in educational settings. Moreover, Everett Rogers' concepts about diffusion of innovations are among the most used and cited thoughts and views in this context (Yates, 2004).

The framework followed in this study provides an integrated structure to investigate the current status of CAT tools practices in the studied context with particular consideration to the DoI perceived attributes of innovation to examine the contextual influencing factors. It utilises the three perceived attributes of innovation: relative advantage, compatibility and complexity to investigate the three main elements of the study: the socio-cultural, economic and technical factors and their effects on integrating CAT tools in the curricula.

The relative advantage attribute of innovation is to study the economic factor. According to Rogers (2003), one of the aspects of relative advantage is representing the relation between the benefits that the users expect from adopting the concerned innovation and the costs of adopting it. Thus, the economic effect of adopting CAT tools is examined in this study to discover its relative impact on integrating CAT tools in the Omani translation training curricula. The socio-cultural factor is treated under the attribute of compatibility which refers to the effect of the existing social and cultural values, the individuals' social needs and their past experiences on the innovation adoption. Rogers (2003) explains that the adoption of an innovation requires the social and cultural acceptance of the innovation. The newly adopted technology of CAT tools features and usage aspects must not conflict with the values, cultural experiences and the needs of the Omani adopting individuals. This study investigates the effect of this factor on the integration of CAT tools in the curricula. The technical factor is treated in this theoretical framework under the attribute of complexity which refers to the technical difficulty that adopters face in using the concerned innovation.

Although the main three factors of this study (economic, technical and sociocultural) are obviously reflected by the three perceived attributes of innovation (Relative Advantage, Complexity and Compatibility), the other two perceived attributes, according to DoI theory, are essential elements in the model. Therefore, they are included here to get complete results built on the construct of DoI model. The same notion applies to the rest of the factors of the model. According to Rogers (2003) , studying the perceived attributes in isolation from the other set of influential variables (type of innovation-decision, communication channels, nature of the social system, and extent of change agents' promotion efforts) provides only one part of the image

about the adoption rate. Therefore, these variables are added within this theoretical framework to the other elements to contribute to providing significant results about the integration of CAT tools in translator training programmes in Oman.

1.8 Scope and Limitation of the Study

Principally, the objectives of this work are guided by the concept that modern translators should master the use of the emerging translation technology which have become a fundamental practice in the discipline. Therefore, translation technology should be integrated in translation training curricula to train novice translators on its practices. The scope of translation technology investigated by this study is restricted to computer assisted translation (CAT) tools which are used as assisting applications to increase work speed and productivity while translators remain the chief doers of translation tasks.

The study is delimited to the setting of higher education in Oman, specifically the Omani translator training programmes. As all the stages of the study are conducted in this setting, the results and implications are only applicable to the context of translator training programmes in Oman. Additionally, the study targets the translator training in undergraduate degree programmes, the postgraduate level is not part of this study .

1.9 Definitions of Terms

To understand and clarify the terms used throughout the study, the following accounts provide the concerned definitions.

Alignment tool (or aligner): One of the tools working in computer aided translation systems. It is responsible for matching the texts from one language segments with their translated versions in the other one.

Compatibility: One of the elements of Diffusions of Innovation theory discussed under the Perceived Attributes of Innovation. This element shows the degree to which a new idea is perceived by adopters as being consistent with the existing values, past experiences, and needs of potential adopters. This indicates the socio-cultural aspects of dealing with CAT tools applications and how they are perceived by the hosting social system.

Complexity: One of the elements of Diffusions of Innovation theory discussed under the Perceived Attributes of Innovation. This element shows the degree to which an innovation is perceived as being difficult to understand and use. For this study this element indicates the technical aspect of CAT tools applications and the adopters' aptitude to use them.

Computer-aided (assisted) translation tools: the set of applications used by the computer aided translation system. They comprise a number of software tools each one of them is responsible for accomplishing part of the work. This set of tools include, but not limited to, tools applications translation memory systems, terminology management software, terminology and phraseology extraction software, translation management software, language search-engine software and concordance applications.

Computer aided (assisted) translation: the type of translation in which human translators use computers as assistants to help them accomplish translation tasks in shorter time, reduced costs and provide consistent translations depending on the computer aiding facilities.

Concordance application: a computer application works within the set of CAT tools as an essential part of translation memories. It is responsible for searching for words or strings as well as finding contextual matching between texts in addition to looking for patterns that serve the text being translated.

Corpus databases: they are language databases collected in CAT systems to serve translation process done through these applications. During translation tasks these databases are used by corpus analysis tool to provide linguistic data from the source text.

Electronic dictionaries: are dictionaries provided in electronic digital form. It is a reachable lexical content that could be bilingual or monolingual. Electronic dictionaries are provided in different platforms including separate software for installation in PCs and laptops, mobile phones and other possible devices. They can also be found in online form.

Fully automatic high-quality translation (FAHQT): A term that refers to a complete high-quality translation process done by machine or computer without the involvement of human translators.

Grammar check application: a computer function for checking the grammatical accuracy of texts. This application is found as tool in the text processing programmes or as a stand-alone application that can be activated separately.

Human translation (HT): a translation done by human translators without the involvement of machines.

Human-aided machine translation (HAMT): a translation done by machine, but there is a human intervention in the process. The human translator interferes by making some modifications on the source language text before the translation or on the target text after it is translated by the computer.

Integration (in curriculum): the act of incorporating training elements (CAT) tools in the existing curriculum of translator training programmes

Machine translation: the type of translation work within which the machine, or computer, does the whole translation job without human involvement using specialized software developed under computational linguistics concepts.

Machine-aided human translation (MAHT): a translation principally done by the human translator with the involvement of some computer tools to speed up the process. It is also called Computer-aided Translation (CAT).

Observability: one of the elements of Diffusions of Innovation theory. The developer of the theory discusses this term under the Perceived Attributes of Innovation. This element shows the degree to which the results of adopting the new ideas can be seen by others to attract them to the adoption experience. In this study observability indicates the visible consequences of adopting translation technology.

Post-editing: an editing done by the human translator to the target text produced by machine translation to amend unsuccessful translation segments generated by computer.

Pre-editing: an editing procedure done by the human translator to the source text to adjust it before uploading it to the computer system for machine translating. The purpose of pre-editing is to improve the text structure in a way that facilitate its translation by computer system.

Relative advantage: one of the elements of Diffusions of Innovation theory discussed under the Perceived Attributes of Innovation. This element shows the degree to which a new idea is perceived by adopters as being better than what they had before. This includes the economic costs of integrating new ideas like CAT tools applications.

Spelling applications: a computer programme that uses lexicon and grammatical data in text processors to scan texts and checks words against ready lists to correct spelling mistakes and errors.

Terminology extraction: an operation done by computer applications known as term extraction tools. Such tools extract certain words or phrases to create term lists that belong to a specific field or domain. It is a computational linguistic operation used by translators to facilitate translation tasks.

Terminology management: a computer application that enables translators to automatically search ready databases to deal with the terms they find in the document they translate.

Translation management systems: a type of computer software used for managing the translation tasks done by human translators. The major role of translation management system is to manage translation project when teams of different translators located in different places work together to do the same huge translation job. This software helps in maintaining translation consistency and efficiency.

Translation memory: a computer application that consists of databases that contain texts segments taken from previous translation tasks done by human translators. The application enables translators and help them reuse these segments when handlings similar texts.

Translation workbench: (also called translators' workstation). It is a set of computer applications and software tools grouped in one platform to assist human translators to do their translation job. Translator's workbenches or workstations comprise a wide range of CAT tools, including word processor, spelling checkers, grammar applications, dictionaries, translation memories, terminology extractors, terminology management systems in addition to other tools.

Translator training programme: an academic set of courses provided over a specific period by education institutions to train candidates on translation studies to work in the field of translation.

Translator's professional profile: the set of skills, knowledge, experiences and attributes that a translator should possess. This includes, for instance, his/her education, certifications, the languages that he/she can do, professional achievements, technological aptitudes specialization, accreditations, etc.

Trialability: one of the elements of Diffusions of Innovation theory discussed under the Perceived Attributes of Innovation. These elements show the degree to which an innovation can be experimented before being adopted by the adopters. It indicates here the trialability aspects of translation technology.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Globalization has changed people's lives. Nations of the world are now connected with vast networks and broad links that address all needs of people, economically and socially, to work all together in interconnectedness manner (Tang & Gentzler, 2009). The key facilitator in this phenomenon is the sophisticated communication that breaks all barriers of geography, language and culture. It is a communicative world where translation plays its role in the global communication (Directorate-General for Translation of the European Commission, 2005).

Translation has developed different changes under the umbrella of globalization and consequently it has become one of the major players of the phenomenon. It has developed to be a practical activity that respond to the trans-lingual and trans-cultural requirements of the new world (Tsui, 2008). One of the big changes that translation discipline has developed because of the world's great changes is the remarkable flow of technology into the field as a result of other developments in human life. According to Sager (1994) the new economic, cultural, social , technological, informational and scientific developments have imposed the need for untraditional linguistic activities and services to be carried out by new professions in a new context of communication process.

In fact, technology has brought remarkable effects to the translation field and has influenced its growth quite clearly, particularly within the course of globalization (Cronin, 2003) where communication costs are decreased, and English language has risen to be the major medium in the international communication (Pym, 2006). This

one language communication situation has required the interference of translation discipline to offer multilingual services. As a result, translation has changed to deal with new markets and new demands. For example, what has been done before on papers is required now to be done in an electronic format, what was delivered through post offices in days, is received now at moments through email and what used to be done in many days in the past can be done today efficiently and masterfully in short hours with the assistance of the new technology. Consequently, translators of the modern era are encouraged to replace their old tools and equipment by computer machines. They are to use the provided applications and software systems, especially those ones which are particularly developed to serve translators (Fulford & Granell-Zafra, 2005).

2.2 Translation Technology Development

2.2.1 Historical Background

Although the technological development in the translation field is recent, the original ideas of technology involved in translation practices belong to older times. According to Somers (2003) the use of machine in translation or getting the assistance of a machine to do a translation job was sought out by interested people a long time ago, even before the invention of computers. This claim was traced by Hutchins (1986) who explains that the idea of using machines in translation practices goes back to the 17th century when scientists looked forward to creating a universal language for improving scientific communication by proposing mechanical coded dictionaries for all known languages. Although those proposals were not appropriate because of major linguistic and technical obstacles, the efforts that sought the help of machines in doing translation jobs has not stop. According to Hutchins (1947), the year 1933 witnessed two

significant events. The first event was a patent issued by the French engineer Georges Artsrouni who presented a mechanical dictionary by using advanced and promising ideas. But his ideas were not implemented; the project was stopped because of the Second World War outbreak. The other event was a proposal made by the Russian educator and scholar Peter Troyanskii who proposed the invention of an automated mechanical dictionary. Although this patent provided an untraditional vision, it did not get the required intention. But when his proposal was closely observed, in later time, significant ideas about machine translation were reflected by Hutchins (1986). That was the situation until the years after the Second World War that witnessed the invention of computers, one of the most important factors that indicated the possibility of turning the machine translation ideas into reality (Chan, 2004).

The emergence of computers had a constructive impact on machine translation research. The newly invented machines or electronic brain, as they were called at that time, were mainly used at that period of history for military purposes, specifically to break the enemy's codes (Hutchins, 1997; Pugh, 1992). As such, computers started to draw the attention of researchers from that point of time because of the great help they could give in language tasks (Schubert, 1992; Thomas, 1992). By that time people started to think of the big changes that computers could add to the translation field. This aspect is indicated by Somers (2003) who explains that the use of computer at that time after the Second World War was usually looked at as the initial start of machine translation. Hutchins discusses these ideas in detail. He notes that the suggestion to use computers in translation "seems to have been made during conversations in New York between Andrew D. Booth and Warren Weaver " (Hutchins, 1986,p.10).

Efforts towards utilizing machines or computers in translation service were continuous. Intensive research works, discussions and conferences in different countries were held for this purpose. One of the most significant events in this regard was the memorandum presented by Warren Weaver in 1949 in the United States. Weaver, a well-known mathematician and computer expert, addressed strategic points around language and communication features and the possibilities of making use of computers in translation (Pugh, 1992). These new ideas, which triggered productive researches and studies, formed the basics of machine translation and were described as the real beginnings of successful research about machine translation in different countries, such as the USA, France, Germany, Japan, the Soviet Union and the united Kingdom (Chiew Kin Quah & Li, 2006). Consequently, promising research on machine translation was enthusiastically launched, pushed by the advances that computers developed during the middle decades of the last century. Accordingly, research groups were formed in different countries with different tracks, but they focused on the same main target which was to use computers to do translation tasks or to produce fully automatic high-quality translation.

However, there was disagreement about the objectives of those research works. Some researchers and observers in the field of translation had different views. A good example of this disagreement was found in the views raised by Bar-Hillel in 1960 who criticized researches' objectives which targeted high quality translations by using computer machines. He thought that getting a translation similar in quality to the humans' one was unrealistic and impossible. His argument was built on the limitation of the scope of tasks that computers could perform in addition to their incapability of dealing with real world knowledge (Hutchins, 1999). Hillel's ideas were not the only negative views against machine translation research at that time. An important move

was done by the government of the United States in 1964 when it established a committee called Automatic Language Processing Advisory Committee (ALPAC) to evaluate the machine translation researches after spending big funds on those projects. The ALPAC report came in 1966. It was not positive, as Somers states "…it concluded that MT was slower, less accurate and twice as expensive as human translation, for which there was in any case not a huge demand" (Somers, 2003,p.4) . ALPAC report left significant impacts on research efforts in the USA as well as in other countries. This event hindered machine translation research and led to a remarkable slow-down of the work in this field.

The research interruption period did not last for long. The new turn of research, which dated from the late seventies up to now has shown different trends and more notable results in USA, Canada, Europe, Japan and other countries. Chiew Kin Quah and Li (2006) assert that the new course of research which took place during the late 1970s and through 1980s focused on the second generation of machine translation research and resulted in different application systems that varied according to the technical methods used by these systems. Until the end of late 1980s systems had been built using the old approach that included two main systems 'interlingua' and 'transfer' in addition to the direct approach. The new trend of the research contributed to the production of significant application systems like Systran, Logos and Atlas. On the other hand, systems like Ariane and EUTROTRA were made by using the indirect approach. By the late 1990s and beginnings of the new century, other new factors involved in machine translation projects. The most significant factor was the advancements that computers developed during this period of time with a vast range of services they could provide. Another factor was the great leap that global human communication made because of the computers affordability and the wide spread of